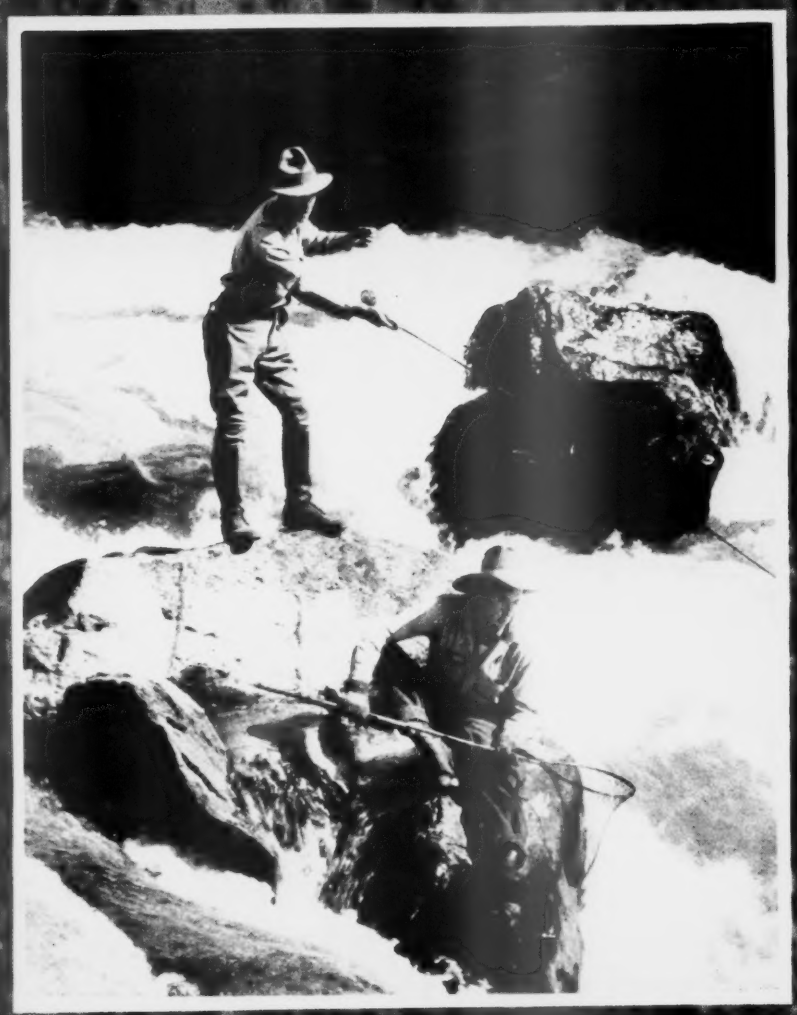
American Forests and Forest Life



June, 1929

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The ESTABLISHMENT OF NATIONAL AND STATE FORESTS where local and national interests show them to be desirable; the CONSERVATIVE MANAGEMENT OF PUBLIC AND PRIVATE FORESTS so that they may best serve the permanent needs of our citizens; the development of COMMUNITY FORESTS.

FOREST RECREATION as a growing need in the social development of the nation; the PROTECTION OF FISH AND GAME and other forms of wild life, under sound game laws; the ESTABLISHMENT OF FEDERAL AND STATE GAME PRESERVES and public shooting grounds; STATE AND NATIONAL PARKS and monuments where needed, to protect and perpetuate forest areas and objects of outstanding value; the conservation of America's WILD FLORA and FAUNA.

The EDUCATION OF THE PUBLIC, especially school children, in respect to our forests and our forest needs; a more aggressive policy of RESEARCH AND EDUCATIONAL EXTENSION in the science of forest production, management, and utilization, by the nation, individual states, and agricultural colleges; reforms in present methods of FOREST TAXATION, to the end that timber may be fairly taxed and the growing of timber crops increased.

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AMERICAN FORESTS AND FOREST LIFE

The Magazine of The American Forestry Association

OVID M. BUTLER, *Editor* L. M. CROMELIN *and* ERLE KAUFFMAN, *Assistant Editors*

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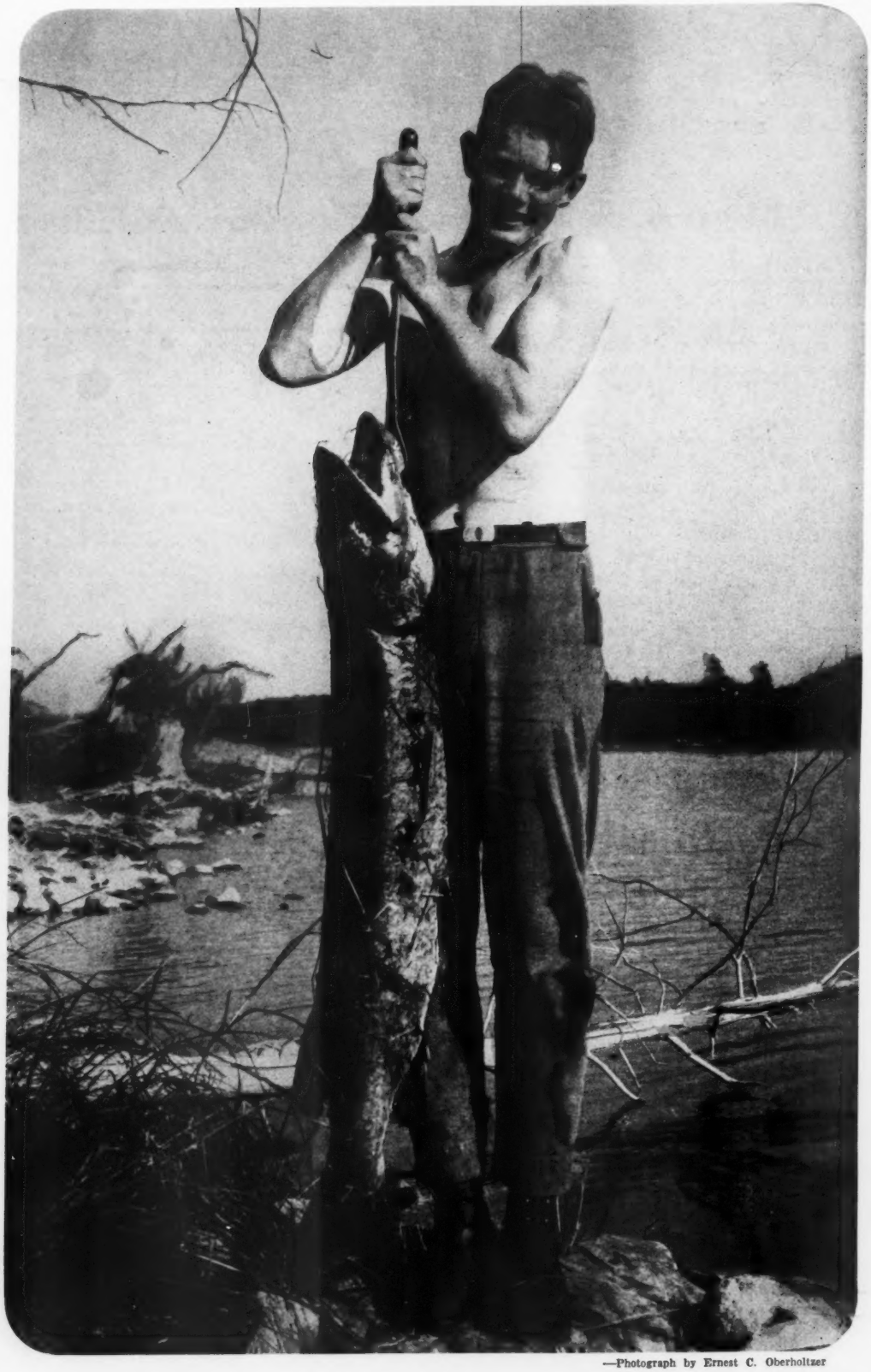
AMERICAN FORESTS AND FOREST LIFE invites contributions in the form of popular articles, stories and photographs dealing with trees, forests, reforestation, lumbering, wild life, hunting and fishing, exploration, or any of the many activities which forests and trees typify. Its pages are open to a free discussion of forest questions which in the judgment of the editor will be of value in promoting public knowledge of our forests and their use. Signed articles published in the magazine do not necessarily reflect the views of the Association. Manuscripts must be accompanied by return postage. Editorial and Publication Office, The Lenox Building, 1523 L Street, Washington, D. C.



—Photograph by Ernest C. Oberholtzer

"The Big Fellow"

AMERICAN FORESTS

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Forestry in Relation to Game

By GEORGE D. PRATT

President, The American Forestry Association

IT IS a common saying that forests are the habitat of wild life. Accounts of the superabundance of game in the early days of our country when forests spread an almost solid covert from the Atlantic to the Great Plains gives substance to that assertion. With these accounts in mind one is easily tempted to dismiss the subject as too obvious to need discussion. As a matter of fact, the dependence of wild life upon forest conditions cannot be established or constructively considered upon such loose and superficial evidence.

We all know that there are certain species of wild life whose natural home is the forest and that to destroy their homes is to court their extinction. On the other hand, we know that there are other forms of wild life whose natural habitat is not the forest but the open country, the lakes and the waterways. That knowledge taken alone naturally gives rise to the belief by some that upon these species the forest exerts no influence. The viewpoint of the superficial observer, therefore, upon the relationship of forests and wild life may be, and unquestionably is, colored by the type of game in which he is interested. The result is a confused and conflicting state of mind which handicaps collective effort and retards enlightened progress in the conservation of both forests and wild life. The word "forest" is derived from a Latin word meaning the out-of-doors. Here is suggested the thought that possibly the Romans of old appreciated and understood the influences of forests better than we of today. It is reasonable to conclude at least that to them forests were not merely trees in place but the dominating biological factor in the making and maintenance of a real out-doors. I believe that we of today will do well to strike that attitude of mind and to view our forests not as a mere aggregation of trees where animals may seek covert or man may cut wood, but as a creator and regulator of environment.

Photograph by Lenwood Abbott

The forest is not only the habitat of many forms of wild life, but a dominating factor in the making and maintenance of wild-life environment everywhere

During the past century the American people have wrought vast changes in the surface conditions of this country—changes which in instances all too numerous have dissipated the building power of nature and diverted it into insidious channels of destruction. An editorial recently published in a Washington paper forcefully sums up the situation.

"To an observer," it said, "who could stand aside and look at the world's history for the last 100 years—particularly at the United States—one thing, we think, would stand out—the seemingly furious and single-minded energy with which we have gone about destroying the things we live by.

"One by one our inexhaustible resources have been attacked. The clouds of passenger pigeons, the millions of buffalo, were the first to go. We swept through our forests more

destructively than any forest fire, until only a few scattered sticks, comparatively speaking, are left. We waste much of our waning supply of coal and oil, and the coal-smoke from a million chimneys pollutes the atmosphere with tar, gas, and oils which wiser generations will regret. Our streams, once full of fish, have to be restocked with supplies which promptly die because we turn our filth loose in our rivers. Larger and larger vessels, armed with deadlier and deadlier tackle, ravage the fish of our lakes and seas each year. Billions of tons of our rich top-soils, carried off by freshets because of our wasteful methods of farming, run each year to the sea down rivers which flood because we have cut off our forests and turned the rivers into drainage ditches. The smoke of our burnings of irreplacable humus goes up to Heaven."

There is the ugly picture of plundered nature in outdoor America. Only by fixing in our minds the broad picture of these mass changes, their causes and their effects upon the environment of plant and animal life can we properly glimpse the full relationship of forests and game. I say glimpse because the subject is as yet little explored and our knowledge of the influence of the forest upon the body of conditions which constitute the environment of wild life is all too imperfectly known. But we do know that wholesale removal of the forests causes a violent upheaval in nature's orderly work of creation and sets in play destructive influences that affect adversely not only the wild life of the immediate locality but that which gathers, feeds or propagates hundreds of miles distant. These influences make no clear-cut distinction between forest and non-forest game. They may and eventually do send their tentacles into the environments of inland fish, birds and game animals everywhere.

Photograph by George D. Pratt

Of the many trenches to be taken in the battle for our forests and our wild life, the trench held by the fire demon comes first and foremost. We must consider not alone the actual wild life burned but the nests and breeding habitats destroyed, sources of food supply temporarily or permanently snuffed out and the countless thousands of birds and animals driven from their natural haunts

The aftermath of forest destruction in this country is altered stream flow, modified food supply for wild life, increasing floods, soil erosion, forest and woodland fires and changed conditions of local climate. Every one of these factors goes directly or indirectly to the living and breeding conditions of wild life. There is not space here to trace their effects singly or collectively, but we may profitably consider them in a broad way. Henry Van Dyke's admirable poem "Salute to the Trees" contains this expressive line: "Their roots are the nurses of rivers in birth."

What a vast change there has been in our inland streams during the past half century, particularly here in the East. Nursed in the lap of abundant forests they were once pure, clean and well regulated. Robbed of their forest-guarded sources thousands of them have become puny, irregular, sluggish and seasonal. Every violent storm makes use of them as carriers of soil washed from unprotected slopes and as channels for angry waters that were once dissipated by being fed into the soil by dense forests. Consider for a moment the far-reaching effect of these changes in stream flow upon wild life.

The wild duck that feeds or nests upon the lower reaches of a stream is periodically dispossessed either by destructive floods or famishing droughts and must seek food and shelter without aid of a Red Cross. Lowlands that would otherwise make ideal habitat for certain forms of wild life are flooded often in season when the game is raising its young. For magnitude of effect there is no better example than our Mississippi floods which throughout the very heart of our nation turn the environment of our wild life into mere shambles of biological respectability and permanence. Aquatic birds and

animals that live in the waters and flat lands of the lower Mississippi by the thousands have their lives, homes and food supplies washed away by increasingly frequent floods which gather their waters and silt from the deforested slopes of a thousand tributaries. We preach game protection; we talk it; we have elaborate laws enacted, but these efforts, good though they are, avail little so far as wild life is concerned unless we go to the roots of the problem which are to be found in the roots of the forests.

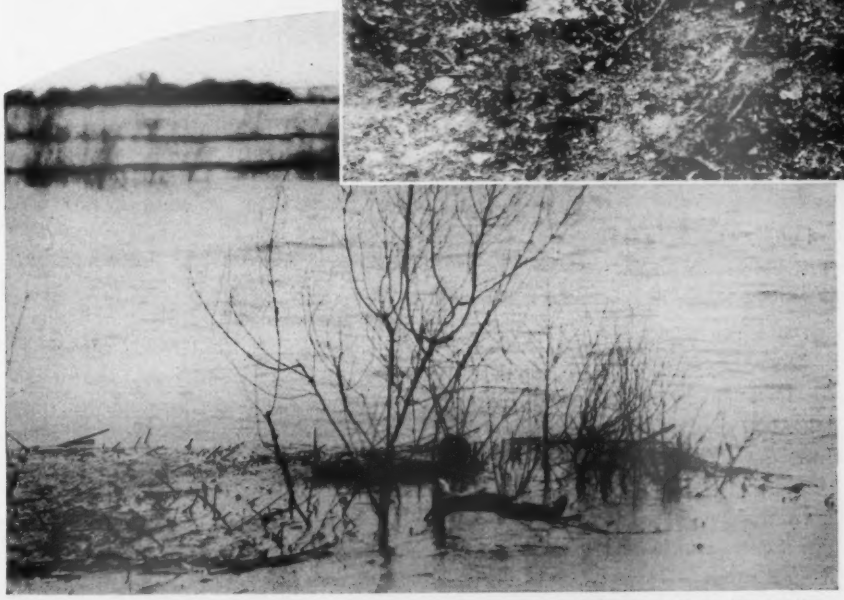
These widespread changes in the course of nature so destructive to bird and animal life are equally destructive to fish life. Take for example the black bass which from the day he is hatched lives only on live food. If the roots of the forests are the nurses of rivers in birth, they are also the gardens that feed our inland fishes and purify their waters. Dr. Charles Reitell, of the University of Pennsylvania, declares that to successfully raise black bass we must have live food and provide a vegetation which will bring into being a live food supply for the millions of black bass. By cutting our forests we have in part at least cut off this live food supply. Springs and small brooks have dried up and periodic droughts have killed plant life upon which the live food of the bass is dependent.

"This depletion of the great sponge," declares Dr. Reitell, "not only means death to the food of fish in drought periods, but likewise plays havoc in flood times. Muddy water carrying sediment in great quantities deposits it upon all forms of water vegetation, smothering and hampering its growth, while in excessive storm periods tremendous quantities of food-bearing vegetation and larvæ are torn from their moorings and carried off." What is true of the black bass is true in one form or another of other game fish. We are working against terrific, indeed impossible handicaps when we attempt to propagate fish in streams whose waters and food supply are devoid of forest influences.

What of other changes brought by deforestation? I have mentioned soil erosion as a contributing factor of flood destruction. The washing of millions of tons of rich top soil every year is making inroads upon the food supply of our wild life that no man can fully appraise. That it is a staggering factor in the disruption of wild life environment there can be no doubt. It is less spectacular than forest fire but if we knew the facts I believe that soil erosion would rank equal to fire as a home and food robber of American game.

I do not minimize in any degree the destructive influence of forest fire. It is the confederate of deforestation, of floods and of soil erosion. We shall perhaps never know the amount of wild life, real or potential, burned up by the thousands of fires which every year sweep over thirty to forty million acres of our wild lands. Not long ago my attention was called to two fires which occurred last fall in

United States Forest Service



Photograph by Stanley Clisby Arthur

The aftermath of forest destruction—Above, one of the three hundred deer that perished in a forest fire in California in 1928

At the left, wild life flood refugees. A muskrat, one of our most valuable fur-bearers, occupying a raft it has itself built. A snake clings to the small branch directly in front of the muskrat, and a tree frog rests on the snake's back

Riverside and San Diego Counties, California. These two fires occurring at about the same time eventually burned together and covered approximately 300,000 acres of grass, brush and woodland. It is reported that the carcasses of 300 deer which perished in the fire in Riverside County alone were found and the number of quail burned was placed at 15,000. Numerous instances of the wholesale and outright destruction of wild life by forest fire might be cited. We must visualize, however, not individual instances but the aggregate effect of forest and woodland fires as they touch every section of this country. We must consider not alone the actual wild life burned but the nests and breeding habitats destroyed, sources of food supply temporarily or permanently

production of any section of our country? The American Forestry Association has tackled the problem on the ground. It has five well-equipped motor trucks touring the woodland sections of three of the southern states. By motion pictures, lectures, lantern slides, distribution of appropriate literature, it is seeking to drive fire out of the southern woodlands by instilling into the local people an appreciation of the possibilities of forest and wild life restoration.

I realize that in some instances woodland fires are followed by shrubs and plants of special food value to certain species of game birds and animals but by no stretch of the imagination can the value of this growth, which may at best be temporary under repeated burnings, offset the tremendous toll

Photograph by C. C. Deam

"Their roots are the nurses of rivers in birth." Fire, overgrazing and washing exposed the mineral soil to free erosion on this slope in Indiana. The erosion and washing away of millions of tons of top soil every year, declares the author, is making inroads upon the food supply of our wild life that no man can fully appraise

snuffed out and the countless thousands of birds and animals driven from their natural haunts.

Let us drag out the whole red record of forest fires in this country that it may warn us to action. According to government figures there occurred in the United States during the year 1927 a total of 158,000 forest and woodland fires. They burned over 38,000,000 acres. These figures do not include Alaska. It may well be marked that in the southern states alone in 1927 no less than 127,000 fires were reported and the aggregate area burned over ran to the staggering total of 36,290,000 acres. Until that record is wiped out what real hope have we of lasting and complete forest and game restoration in the sixteen southern states which offer probably the best opportunity for combined forest and game

which forest fire annually lays upon the game of this country. Of the many trenches to be taken in the battle for our forests and our wild life, if success is eventually to crown our efforts, the trench held by the fire demon comes first and foremost. We cannot restore outdoor America with a flaming torch in every other man's hand!

There are in this country some 550,000,000 acres of forest and woodland. The kind of trees, if any, and the kind of wild life, if any, that they may expect to yield will depend in a very large degree upon the protection and management which they receive at the hands of the American people. The problem of the forester is to protect the soil against erosion and fire and encourage and bring about the perpetual growing of forests. In that undertaking the sportsman and the lover

(*Continuing on page* 361)

Casting for Trout

Big Game in Little Fish

With Special Reference to the Yellow Perch

By FRANK A. WAUGH

THE littlest fish make the most sport! This statement, absurd and paradoxical as it may seem, can easily be proved. We have only to mention the three smallest game fish in America to satisfy every sportsman. These are the trout, the bull-pout, and the yellow perch.

With respect to the trout there can be no argument. The exceeding great merit of the bull-pout, aside from his delectable eating quality, lies in the fact that every small boy catches him. And I defy any lunatic to say that the small boy pulling up bull-pouts with his alder rod doesn't experience more orgasmic thrills, doesn't get more real sport, than any other fisherman in Kingdom Come. The prime merit of the yellow perch is that everybody catches him. Every summer, scientifically estimating, 15,000,000 persons take their vacations by the northern lakes. They go out bravely fishing for bass, togue, muscalonge, wall-eyed pike and two kinds of pickerel. At the end of the day they come home tired and happy with two dozen bright yellow perch.

It should be said immediately that the perch are much better eating than any of the big fish that got away. Excepting the trout and its immediate congeners, the yellow perch is the sweetest, daintiest, most satisfying pan fish in all northern waters. Or if that won't cover the case we will say any waters, northern or southern, eastern or western, salt or fresh.

Nor need it be inferred from what has been said above that Mr. Perch is so flat-minded and so anxious to be caught. There are hours of the day when he goes to some sandy reef and turns in for a nap. Nobody can wake him up and feed him worms then. There are days when he knocks off altogether and goes to the circus. These are usually hot, still sunny days, or else they are dark stormy days. But the yellow perch is like any other game fish in the peculiarity that when he doesn't bite you can't catch him. It is for days like that that we take canned corn beef into camp.

The small boy with his alder rod gets more thrills than any other fisherman in Kingdom Come

The best bait for perch is the plain common angle worm, analog of the common voter. Big night-crawlers will do, but the ordinary garden variety is distinctly better. Other baits are sometimes swallowed — even trolling spoons, but they are excep-

tional. A medium sized hook is much the best, though good perch can be caught on any size, from small minnow hooks to 5-0 with wire snells. For many years I have maintained a personal argument with one of the leading fishermen of Canada as to what pattern of hook should be used. This Canadian expert says a straight sproat hook in the proper form, but I hold out for Cincinnati bass. For more than thirty years the perch in several northern lakes have been waiting to have this point of technique settled; but meantime they keep nibbling coyly at every sort of hook made and provided by the manufacturers.

As to rods, whole chapters might be written. The habitant habitually yanks them up with a handline. The small boys use poles of stripped maple, cut in the woods. Some cheap sports use the stiff bait-casting rods with which they have been trying all day to hook a bass. But if a sportsman wants some good sport he will take a fairly stiff fly-rod, about eight feet long, put on it a fly reel with twenty yards of soft casting line—not enameled fly line—a three-foot leader and the aforesaid Cincinnati bass hook number twenty-four, weight it with two split shot, bait it with a very wiggly worm and show his skill. Parenthetically, I want to say that perch will sometimes, though rarely, take the fly. When they do there is sport enough for any fisherman.

There's a special technique in handling perch. Reverse the fish and make a shallow cut along both sides of the dorsal fin clear to the tail

Now between the catching of the perch and the eating comes a little chore which also involves some fancy technique. The fish have to be cleaned. The only professional system is to skin them; never waste time and religion scaling them. Every seasoned perch angler has his own trick, but the best manipulation, I think, is as follows:

Find a good place to sit. A clean log is highly eligible, or one can sit on the camp doorstep. An overturned canoe is good. But there is no use breaking one's back crouching on one's haunches like a Pima Indian at a crap game. Find a smooth board on which to work. The log will do; but some flat surface is exceedingly handy. Have a strong knife with a keen blade and a sharp point. Grasp the fish in the left hand, head forward, back up, and with the knife make a shallow incision across the back at the forward end of the dorsal fin. This is to help with the next stroke. Reverse the fish, holding it back up but tail forward, and with the point of the knife make a shallow cut from the head alongside the dorsal fin clear to the tail. Then make a similar cut along the other side of the same dorsal fin. Now grasp the loosened fin at its rear end between the knife blade and the right thumb and pull it clear out of the fish. Next cut the head nearly off, cutting from the back toward the belly.

Then grasp the fish tightly, head forward, bottom up, and with a firm stroke cut away the whole belly of the fish. The total viscera come out at the same stroke. The cut is made from the head nearly along the median line and comes out at the anal fin. This is the hardest operation in the program. It requires a good knife and a strong wrist. Next turn the fish, what remains of it, side up, head forward, and with the knife blade and the thumb rip off the skin from the head to the tail. This will come off in two pulls, one on either side. Cut off the tail. This fish is now skinned. Take the next one. And so on to the end of the catch. When the skinning is done the fish have to be washed and drained. The board comes in handy for that. They should then be laid out on a platter and freely salted on all four sides—right side and left side, outside and inside. The salted fish on the platter should be put in the coolest reservoir at hand and left over night, or at least six hours. Thus salted and hardened they will lie flat in the frying pan and behave like good conservative fish ought to. First start the bacon to frying. While it is sizzling take one spoonful of cornmeal and one of white flour and mix them together. Roll each fish in this mixture, place it in the bacon fat and fry to a delicate henna-brown about the color of a flapper's stockings and—oh, boy!

Then finish the operation with two short strokes, ripping off the skin from the head to the tail—never bother to scale them

Yes, there are other ways of cooking yellow perch, other ways of dressing them, other ways of catching them; but any way you take them they are real fish—real sport.

The Trees of Potowomut

An Early Private Tree Planting Experiment Has Given America a Unique Man-Made Forest

By Erle Kauffman

THOMAS G. MATHEWSON spoke patiently to his gray horse and the wheels of the old buckboard ceased to turn. "The oaks," he said in his curiously quiet manner, nodding to the right, "and planted from acorns." I looked out over the evenly spaced rows of vigorous white oaks, nearly half a century old. "Yes, sir," he continued reminiscently, "a hole was poked in the soil with a pointed cane and an acorn dropped in. In fact, three holes were made and three acorns planted—one for the worms, one for the squirrels, and one for the tree."

Thus on Potowomut Neck, near East Greenwich, Rhode Island, did a part of one of the most unique and interesting forest plantations in America have its beginning. This was in 1874, less than fifty years after President John Quincy Adams attempted to plant oaks from acorns for sail-of-the-line timber on Santa Rosa Peninsula, in Florida, and twenty years after Thoreau wrote of the plantings on Nantucket Island, off the coast of Massachusetts.

But the Santa Rosa experiment was victimized by political intrigue, while the Nantucket plantings have for years been subject to debate, and there is no indication on the Island today of these early plantings. On Potowomut Neck, however, there is a forest of nearly five hundred acres of almost every tree native to that region—oak, pine, larch, and spruce. There is also a striking plantation of Douglas fir, the first of this great tree native to the Pacific northwest to be grown successfully in the East. So it would appear that not only is this one of the earliest examples of private forestry in America, but one of the most noteworthy. Today the plantation is known as Goddard Memorial Park, and is under the administration of the Rhode Island Metropolitan Park Commission, but the personal and human touch characterizing its beginning has not been lost. The same sort of patient, tree-loving personality that conceived the forest nearly half a century ago carries on in Thomas G. Mathewson, superintendent of the park, and for the past thirty-nine years guardian of these trees.

Over seventy years old, Mr. Mathewson daily directs the administration and management of the "grove." To visitors he has untiringly related the history of the Russell-Goddard estate, as the park is known to the natives of Potowomut Neck, and is willing to "tell it a thousand times more" if he can "bring about an appreciation of trees," for he believes that forest and tree desecration can be traced to lack of this appreciation. And it would appear that Mr. Mathewson knows whereof he speaks, for in the years Goddard Park has

White pine plantation with Douglas fir as a border on Potowomut Neck, Rhode Island. These firs, as seedlings, were shipped from the Pacific northwest in 1890, the first, so far as is known, to be planted in the East

The first forest plantation on Potowomut Neck was of white pine. Pruning and thinning have given this "man-made" forest rare beauty

been open to the public for recreational use there has never been a major desecration.

And why should there be? The history of the estate is one of the most human stories we have ever had in a narrative which appears to concern itself chiefly with natural causes and hindrances of growth in the tree world, but which really is the reflection of the patient and nature-loving personality of mankind. There is intrigue; there is romance and adventure that interwinds into the story if there were space here to tell it. The property, known as "The Oaks," was once owned by Richard Green, a notorious Tory sympathizer of Revolutionary War days, and the great old mansion, which still stands, housed many notable personalities until it was presented with the forest to the State of Rhode Island a few years ago by Colonel Robert Hale Ives Goddard and his sister, the Marquise d' Andigne, of Paris.

Tree planting on Potowomut Neck began during the lifetime of Thomas P. Ives, of Providence, who owned the estate before it descended to his sister, Hope Brown Ives. These first plantings were wholly ornamental and of single trees. In 1870 the care of the estate passed into the hands of Henry G. Russell, a New Bedford business man who had married Hope Brown Ives. Mr. Russell continued to plant trees as Mr. Ives had done, but his interest soon grew until he passed from the planting of ornamental trees to active reforestation of his sandy and barren acres. These first forest plantings were of white pine, and this is especially significant because planting of this species continued throughout Mr. Russell's life, and was a strong factor in later developments. The first pine plantation covered a little more than two acres, and wild seedlings from a nearby pasture served as planting stock. A few years later Mr. Russell brought in a large number of young trees and planted them on adjoining acres. Seed of Scotch, Austrian, Corsican and white pine were then purchased and planted in a small nursery established on the estate. These were never transplanted, however, for birds took most of the seed and the few trees that sprouted were killed by drought.

One of the red pine stands planted in drifting sand in 1885. This species has demonstrated unusual ability to withstand adverse conditions

"This is just an indication of the great difficulties our early tree planters encountered," Mr. Mathewson explained. "The uncertain and limited forestry knowledge in this country at that time made the proper choice of plant-

ing stock and the best methods of handling it almost impossible."

But even more insurmountable obstacles were before Mr. Russell in the unfavorable soil and location of his plantation. The soil was extremely light and sandy, becoming pure sand near the shore line, and in other places it consisted almost entirely of gravel. Too, the ground was kept exceptionally dry by constant exposure to severe winds. Consequently, it was almost impossible in many cases for the roots of the young trees to get a good start, and it was in an effort to build up a soil binder on these exposed places that Mr. Russell experimented with the ailanthus, the Chinese "Tree of Heaven." The experiment was a failure, however, for in the shifting sand and exposed to severe winds most of the trees were destroyed at a somewhat early stage. Today, only a few scarred and dwarfed remnants are to be found.

Thomas G. Mathewson before a stand of Norway spruce, nearly fifty years old. The young border trees are Douglas fir

Mr. Russell planted white pine in rows four feet apart, with the space between the trees about the same distance. In a few cases Scotch and Austrian pine were planted with this species. Most of the young trees were seedlings of from six to twelve inches in height, and while there is no record covering the source of all the pines planted, a great many were known to have been brought in from the Robert Douglas Nurseries, at Waukegan, Illinois, and, of course, the home nursery furnished them in quantity. These plantings continued until 1896, at which time more than 200 acres had been covered. Throughout the period of early growth, Mr. Russell thinned his stands and the trees today are in splendid condition. They range from eight to fifteen inches in diameter and from twenty-five to thirty-five feet in height.

Practically all of the early plantings of white oak were made from acorns, and the story of this feature is one of the most personal of the entire project.

"The acorns were gathered by workmen on the property," Mr. Mathewson said, "from under the very beautiful native white oaks which stood near the house. and for which the family undoubtedly had a peculiar affection. They were then planted in drills or furrows, between rows of European larches. Followed by a little group of helpers, each with a well-sharpened broomstick, Mr. Russell captained the undertaking with his pointed cane. With this familiar implement he used to poke a hole of the proper depth in the soil and drop an acorn in it."

These plantings were customarily cut back to the ground several times in order that one strong whip might be finally

Tree planting has never ceased at Potowomut Neck. This is one of the recent plantations of Douglas fir on the wind-swept shores of Greenwich Bay

allowed to grow to maturity. This practice, however questionable from a scientific point of view, apparently did little harm. The rows of European larch between which the white oaks were planted, were set out about the time the first white pine plantation was completed. The total acreage planted to larch can hardly be determined, but Mr. Mathewson stated that more than 60,000 seedlings were purchased and that many more were raised from seed in the home nursery. The very first larch experiment was a total failure as every seedling died within a year. The second attempt, with eighteen inch plants, and which were hand-hoed, met with practically the same fate. A third attempt was far from being successful, but Mr. Russell managed to keep a few of the trees alive.

Perhaps the most successful forest planting after the white pine and white oak was made with red pine. These were first brought to Mr. Russell's attention by the late Charles Sprague Sargent, who suggested that they be planted on the most exposed parts of the estate. These succeeded from the start, making a quicker growth than the white pine, and a few of these trees now standing in the exposed regions of Potowomut Neck have well demonstrated the ability of their kind to withstand adverse conditions. The chestnut, also, was planted with success, and the small stand was in splendid condition until attacked and killed by the blight several years ago. The first plantings were made in 1887 from seedlings grown in the home nursery. In twenty-five years a number of these trees had reached a growth of seventy feet in height.

In 1890, more than 24,000 Douglas fir seedlings were brought in from the West, the first shipment of this species, so far as is known, ever made for planting in the East. The Douglas fir has produced a beautiful stand, and has endured the shade of other trees with considerable success. Unfortunately this plantation has been affected by a European canker. In planting this species, the seedlings were used as borders to other planting or as ornamental groups and specimens. Those underplanted at the end of twelve years indicated slow growth but adaptability to conditions. A few Colorado blue spruce were also brought in and were planted as ornamental groups, specimens and borders. These, too, attained size and beauty.

When, after Mr. Russell's death, Colonel Goddard took over the administration of the estate, plans were made for the perfection of the forestry project inaugurated by Mr. Russell. The irregular physical boundaries of the old plantings, as well as the great differences in their condition, and the varying treatment they had received with regard to thinning and underplanting, made this task difficult and of considerable opportunity for technical skill. It was necessary to complete as well as correct the existing plantations and to make new ones which would add definite value and beauty to the entire undertaking. Too, there was the problem of joining the old and new forests so that in time the forest park would bear the aspect of a single, well developed scheme. Colonel Goddard appealed to his friend, the late Charles Sprague Sargent, and the result was that a technical forester was employed. Under his direction, from 1910 to 1913, more than one hundred acres were planted, but not without difficulty. Shallow, sandy soil, exposure, and winds from the ocean troubled the forestry expert as much as they had troubled Mr. Russell. In addition, in 1911 and 1912, abnormal summer heat and winds literally burned up the young trees. Too, a serious grass fire consumed hundreds of the seedlings.

Notwithstanding these difficulties, Colonel Goddard replanted the burned area and the three years' effort on the whole was productive of very satisfactory results. Perhaps the most noticeable feature of these recent plantings is the large acreage successfully set to white pine, and the very flourishing plantation of young red pine; but without a doubt the most interesting and instructive factor was the establishment of a hardwood forest arboretum, and the rounding out of the earlier evergreen plantings to form an evergreen forest arboretum.

The hardwood forest arboretum was designed to cover every deciduous species of real value that would add to the beauty of the estate as well as serve for educational purposes. How the different species adapt themselves to local conditions and in what degree they would attain their normal size and beauty was the primary question involved. The evergreen forest arboretum was intended to fulfill the same purpose as the hardwood arboretum. The two projects flourished until Colonel Goddard's death in 1916, when they were abandoned.

When the forest was turned over to the people as a State Park, it was with the condition that Mr. Mathewson remain in active charge of its administration. Hence, this tree-loving individual who for thirty-nine years has watched this unique forest park take form, is today devoting his remaining years to fashioning plans for the perpetuation of the park and to educate the public to these plans.

"I have never permitted automobiles in the forested part of the park," Mr. Mathewson explained, "chiefly because of the fire hazard. Then, too, I believe deeper appreciation and knowledge of trees are found when one walks along the trails and paths. One is really impressed when the discovery is made that an inch below the forest floor is sand and gravel, and wonderment at the remarkable growth of the trees under these conditions leads to a sympathetic understanding of the significance of forests and trees.

"There has been some talk of turning the old mansion into a sort of casino for the amusement and convenience of the public. I do not like this, and my greatest work right now is to convince the Metropolitan Park Commission that a use should be made of the home that will be in keeping with the forest. Foresters and students from all over the country visit the park for the purpose of study and I do not believe that a better use could be made of the house than the creation of a forest museum and library. I do not believe the people of Rhode Island want one of their oldest and most picturesque homes turned into a soft drink emporium, or amusement resort. It is not in keeping with the dream of a beautiful and valuable forest on Potowomut Neck that spurred both Mr. Russell and Colonel Goddard to the tremendous task of turning an area of drifting sand dunes into one of the most unique forests in America."

Character In Trees

The Philosophy of a Man Who Sees Human Nature in Trees

By

A. T. JACKSON

"I CAMPED under this tree because it's the first one I've seen in two hundred miles. Don't know when I was gladder to see a tree. Just like meeting a close friend I hadn't seen for years."

The speaker, John Curtlin, a well-preserved man of sixty-five, sat with his back against the trunk of a young sycamore tree. In one hand he held a small branch bearing several large green leaves.

"Have a seat on man's first chair," he invited, tapping the ground. "Riding for hours over treeless plains has made me mighty lonesome—for trees and men. I'd about as soon never see anybody as to be forever separated from trees. These plains of the Southwest don't have many trees; but some day they will be plentiful here. I'd like to have a part in bringing it about. Trees mean a lot to me.

"On my place in Arkansas," he continued, "I have a hundred different kinds of trees. There's a giant oak about a mile from my house, and I visit it every day when I'm home. I walk out there to think things over. There are plenty of trees nearer my house, but somehow they don't mean as much to me as that one. I guess it's about the same with men. It's not every fellow you meet who you'd want to have for a companion."

I wanted to hear more of this man's philosophy of trees. Being an extensive traveler and close student of trees, he was full of his subject and delighted to talk about it.

"In the sawmill or lumber business?" I ventured to ask.

"No. I never tried to make a living working with trees. I inherited a different sort of business. I think it would

A Great Tree Plays the part of Life—full of Usefulness, Decked in Beauty, and Its Glory and Character Remain Even as it Lifts its Bare and Twisted Arms in Answer to the Call of Death

The Eucalyptus Speaks Symmetry, Poise, and Calm Content—the Lovely Things of Life. Its Great and Rapid Growth Tells of Warmth and Generosity

The Banyan Tells of Expansion and a Constant Branching to Wider Usefulness,—with Its Myriad Roots Wide-spreading in the Earth

Comparable to the Anger of Man in its Dangerous Quality is the Poisonous, Sticky White Juice of the Upas Tree, which Flows When the Tree is Bruised

have hurt me to deal in trees as articles of commerce. In my mind they rank with the great masterpieces of painters, sculptors, or writers. Beautiful trees are certainly God's masterpieces. I have always liked trees; and since I retired, five years ago, I have spent much time and money seeing and studying them. As I observe trees I get close to God. The closer I get to him, the more clearly I see how men and trees are alike.

"Can't say I have any favorites among the different kinds of trees, unless it is the pine. It combines beauty and grace, hardiness and utility to an extent seldom equaled by any other tree. The pines remind one of those people who are capable of devoting their lives to the service of mankind. But when it comes to sturdiness and durability, I like the ironwood and oak. They represent dependability in men. I think a hard-headed man—if set along the right lines—is as much needed as the hardwood products of the oak.

"Intellectual and business giants among men are typified by trees like the redwood of California and the eucalyptus of Australia and certain parts of the United States. It is claimed the California Big Trees and the eucalyptus of Australia are the oldest and largest living things. If a tree has lived for a thousand years or longer, don't you think it is a pretty good symbol of permanence? And if anything grows to be five hundred feet high, shouldn't it be looked up to? Each century produces about half a dozen men who are giants. We have, I think, two or three in the United States now.

"In another class there are the spreading trees—the banyan of India and the mangrove of the tropics. They send down roots from the branches and make new connections in the earth or mire, until they cover acres and acres. They remind me of people who never stop learning—an after-dinner speaker would call it 'sending down new roots into the soil of knowledge.' And again these spreading trees are like the chain-store-king type of man, who is always expanding and branching out to wider usefulness. It is a gift that all men cannot have—no more than every tree can be a banyan or mangrove.

"Do you know what the ailanthus and mulberry trees call to my mind? They are back-stage performers that get very little credit from the world at large. The trees play an important part in producing our silk togs. This service calls to my mind the case of parents who train and equip a gifted youngster and make possible his success. Too often the

helping hands are overlooked." Curtlin paused and gazed into space. He loaded a corncob pipe, lighted it leisurely and began puffing.

"Since the beginning of history," he resumed, "certain trees have been held in reverence and awe. Tradition and sentiment still cling to a few of them, like the yew, cedar, bay tree and plane tree. You know the yew has a gloomy association from serving so long in churchyards and for mourners. That shows how binding is custom. The man who dares to be different is rare.

Sturdy, Dependable, Deep-rooted, the Pine Challenges Human Weakness of Every Kind. Combining Beauty and Grace, Such a Tree as this is Indeed a Masterpiece of God

"The Bible and other literature says much about the cedar and bay tree. When I look at a bay tree I think of that passage about 'the wicked spreading himself like a green bay tree.' And you know the early Greeks used the bay, or laurel, to crown the winner in the Olympic Games. We can't get away from what our ancestors did.

"The Greeks used to worship the plane tree, which is a brother to this big-leafed sycamore. You remember the story about Xerxes stopping his great army for several days to gaze on a fine specimen of plane tree. He later had a gold medal engraved with a picture of that tree on it. In Europe I've seen a number of those old plane trees—said to be more than three thousand years old.

The Steadfast Oak Spreads Friendly, Companionable Arms, Inviting the Confidence of Men—"He Also Serves Who Only Stands and Waits"

"On the Island of Java there is a tree called *upas* that has a poisonous, sticky white juice. It runs out when the tree is bruised or cut. Natives use this fluid to poison arrowheads. To me that symbolizes the way anger—the poison flow coming from bruised feelings—may make a man's word-darts dangerous. But the natives also use the inner bark of the upas for making bags and clothing. Applying that to men, it shows that there is 'a little bit of good in the worst of us.'

"There's a mighty warm spot in my heart for the flowering trees. They offer inspiration, peace and companionship in fuller measure than trees that do not bloom. Of the many in this class, the magnolia and apple are my favorites. I can sit for an hour and look at their beautiful blooms and each minute see something new in them.

"Did you ever notice how many trees have peculiar tastes in their bark, leaves, roots or juice? Why does each have its particular taste? The cinchona is bitter, and it yields quinine. Some men are bitter in their own experiences, but are broad-minded enough to be true servants to man. The bitternut hickory is tall and pretty, and its nuts have plump, white

The Redwood Typifies Giant Characteristics—Greatness in Intellect and Accomplishment as Well as Permanence, in its Life of Thousands of Years

kernels. But they are so bitter all animals let them alone. Bitternuts resemble persons who are well groomed but really bitter at heart. To quench my thirst, I've chewed leaves and twigs of the sorrel or sourwood tree. When I do this I'm reminded that the little bitter experiences of life often work to our lasting good.

"Did you ever chew leaves of that scrubby little tree called prickly ash? Well, you don't need to be told how it makes your tongue tingle for a few minutes. But you know the sensation soon dies away. And what do you have left? Nothing. That's the way with some people. When you meet them, they try to give the impression that they're of importance. When you sound them, you find how shallow they are.

"In my wanderings I've seen a lot of curiosities and freaks among trees. Even these are matched by people somewhere. The Australian bottle tree, with its short, bottle-shaped trunk, makes me think of the bulging waistline of so many of us fellows who have passed the half century mark. The natives of the West Indies use the lace-bark tree for dozens of things. They take the inner bark of strong fibers, made up of several layers, and separate it into web-like sheets of 'lace.' The women use the stuff for all sorts of frills and ruffles. Charles II of England is said to have been presented with a collar and frills made from lace-bark."

"How does the lace-bark tree resemble men?" I asked.

"It shows that the niceties of civilization have an important place in the general scheme of things. It's natural for this tree to have lace-bark; and it's just as natural for most people to want the comforts and frills of life.

"In many climates experts have failed to cultivate successfully the silk cotton tree. It's also difficult to cultivate friendship with some persons. They send off a cold atmosphere that chills fellowship so it can't develop. The acacia is sought after as an ornamental tree because it has feathery leaves and showy flowers. But some species have such sensitive leaves they don't open unless the sun is shining. That is typical of some persons who require friendly back-patting—the sunshine of encouragement—in order that their abilities may open to full capacity. Most of us relish a certain amount of this back-patting. We like to be catered to and appreciated.

"Don't you get a kick out of looking at a piece of glistening bird's-eye maple? I do; and I like to recall the theory of how those little rings were caused by injury under the bark of the tree. Instead of making an ugly scar, the wound causes this attractive formation under the surface. Wherever I've found a character of richness and charm, I've discovered that the person had suffered suppression or received wounds in the struggles of life, and that out of these rare charm had grown.

"One of the most deceiving trees, from the standpoint of weight, is the *balsa* of South America. It is so light that a man can carry a large log on his shoulder. One might think him a Hercules to bear up under such burden; but he is doing nothing remarkable in carrying the cork-like log. That's the way with the troubles and burdens of life. They're never half so heavy as we worry ourselves believing.

"Who can fail to admire food-producing trees? There's no better illustration of beauty and service. Apple, peach, pecan and others furnish good things to eat together with shade and beauty spots. These trees best represent rural life. Farmers, like food-producing trees, make it possible for the rest of us to eat.

"I haven't mentioned what I believe the most remarkable resemblance between trees and men. The ordinary types of trees in any locality are given little thought by those who see them daily. We forget that they are important. Those trees are typical of average human beings, who make the wheels of civilization go 'round."

Twigs and Leafbuds

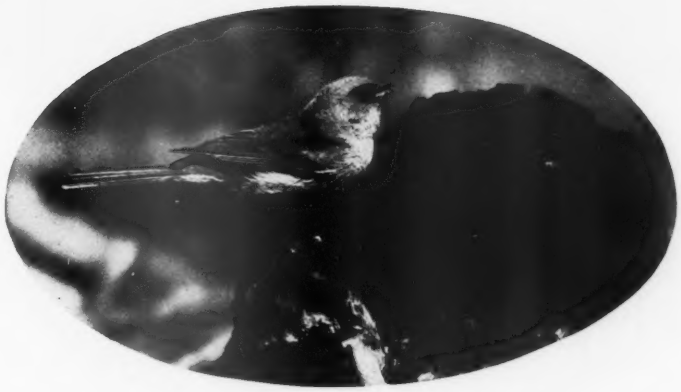
By JENNIE E. HUSSEY

In lacy fretwork, twigs of brown and gray
Beech, birch and maple arching overhead,
Etched sharply 'gainst the rain-washed skies of May
Bend o'er the wax-leaved yellow violets' bed.

Among the matted roots, brown leaves were spread
To form a soft, warm blanket 'neath the snow—
Whose counterpane of white had draped their bed
'Till south winds whispered gently, "Wake and grow."

Red maple buds are bursting into leaf,
And birchen tassels flutter in the breeze;
The white-flowered hobble-bush in bold relief
Stands out against the green of hemlock trees.

A round-leafed orchis lifts its pointed hood
Of twin leaves, silver-backed, and folded tight.
And all the flower procession of the wood
Is led by sweet arbutus, pink and white.



The junco makes himself at home at an improvised feeding table

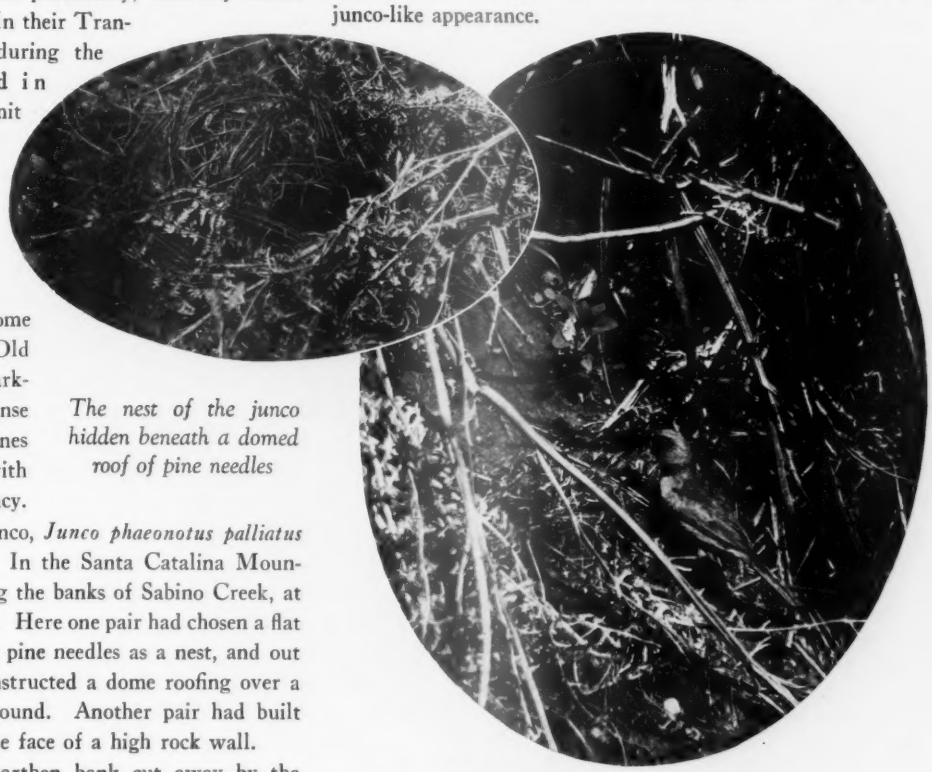
The Arizona Junco

A Friendly Inhabitant of Borderland Mountain Forests

By Robert S. Woods

WHEREVER one meets the junco in its various forms—in northern forests; as the familiar snowbird of eastern winters; amid the pine and fir of western mountains or the redwood and cypress of the Pacific coast—it is the same unobtrusive little sparrow, hopping quietly about beneath the trees, often in company with others of its kind, or flashing its white outer tail-feathers as the flock takes flight. And everywhere it shows a readiness beyond that of most wild creatures to put its trust in the good intentions of the human race.

Perhaps southern Arizona may seem an unpropitious place to encounter this resident of coniferous forests. Nevertheless, the higher mountains near the Mexican border support a bird-life more varied, in all probability, than any similar area in the United States. In their Transition Zone pine forests, during the nesting season, are found in abundance robins, hermit thrushes, pygmy nuthatches, western tanagers, long-crested jays, broad-tailed hummingbirds, fan-tailed pigeons, and other species typical of the north, as well as some interesting immigrants from Old Mexico, such as the oddly marked red-faced warbler, the intense vermilion of whose head shines out in the shaded ravines with almost incandescent brilliancy.



The nest of the junco hidden beneath a domed roof of pine needles

Here, too, the Arizona junco, *Junco phaeonotus palliatus* makes its year-round home. In the Santa Catalina Mountains it is found nesting along the banks of Sabino Creek, at an altitude of over 7,500 feet. Here one pair had chosen a flat surface thickly carpeted with pine needles as a nest, and out of these needles they had constructed a dome roofing over a shallow depression in the ground. Another pair had built beneath a clump of sod on the face of a high rock wall.

Near the top of a low earthen bank cut away by the stream, a cavity, shielded by overhanging vegetation, also sheltered a brood of young juncos. While inclined to be suspicious when first photographed it was not long before they were using the tripod as a way station, and when a few bread crumbs were produced complete accord was soon established.

To the mother bird falls most of the work of providing for the brood, since the time of her mate is much taken up in singing. When at a distance, the sweet song is loud and clear, but when near the nest it is very soft.

The Arizona junco, very different in coloration from its eastern relative, *Junco hyemalis,* and still more so from *Junco oreganus* of the Pacific states, is an attractive bird in its soft plumage of clear light gray, with bright reddish-brown back in agreeable contrast. From the red-backed junco of central and northern Arizona, as well as from others of the genus, it differs in its orange-yellow eyes, which give it an odd unjunco-like appearance.

An Arizona junco bringing food to its young. The dark area in the upper middle of the picture is the entrance to the nesting cavity

Artists of The Outdoors

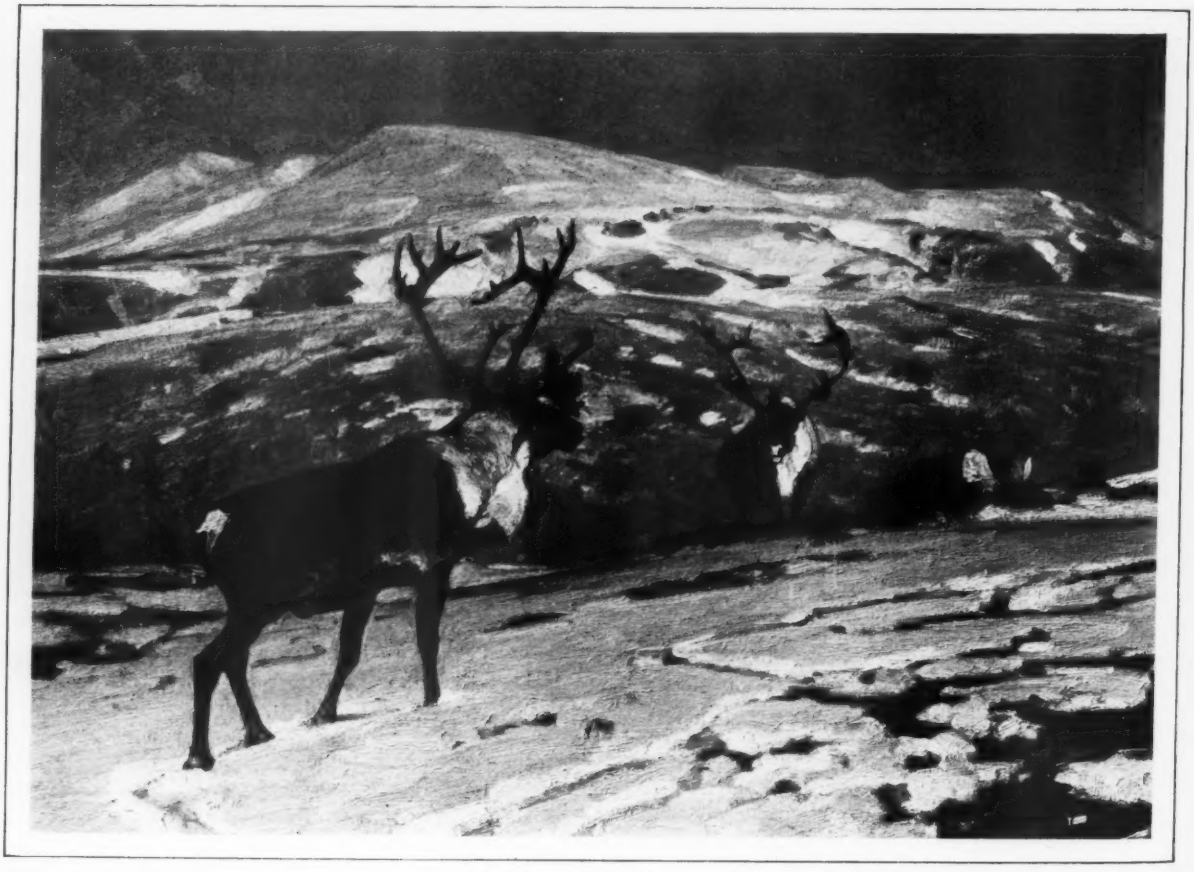
Carl Rungius — Huntsman-Painter

By Lilian M. Cromelin

Concluding a Series of Sketches of Some of America's Most Outstanding Artists Whose Work Expresses Their Love and Understanding of the Forest and Creatures of the Wild.

FOR OVER thirty years, patiently and persistently, Carl Rungius, as a hunter of big game, has traveled the trails taken by the great creatures of the wild. It was this lure that first brought him to the shores of the New World from the Old when, in 1895, he accepted an invitation to hunt deer in Maine. Coming from a line of naturalists, Rungius had inherited an intense love of nature, and his eager studies were carefully guided along these lines when a small boy. Always interested in animals, he early completed an art course and had made a name for himself in Germany as a painter of domestic animals by the time he was twenty-five years old.

As a hunting trip, the expedition to the Maine woods was not a huge success, though Rungius got his deer. His appetite for big game hunting whetted by



"A Stranger"
(Osborne Caribou in the Yukon Territory)

"Three Old Gentlemen"
(Mountain Goats in Alberta)

this experience, the next year he turned his face to the great mountains of the West. Largely unbroken wilderness at that time, these great areas were filled with game—antelope, elk and bear abounded, and here the hunter-naturalist found a veritable mecca—a field for bag and study, rich and seemingly limitless. Here he came close to Nature in her largest aspect and here he sought and found opportunity to study those great creatures of the wild heretofore accessible to him only in captivity. First going into the Wyoming hills after antelope, he soon learned the lay of the land and it was not long before he started, with saddle and pack horse, alone, making solitary camp wherever the trail led, returning to his base only to leave his sketches and trophies and to reoutfit. Instinctive love of the life, and rugged training in the open hardened him to its viscissitudes and enabled him to turn his skill as a mighty hunter to the development of that great gift which has earned him his undisputed title as the greatest painter of wild animals in America today. For Rungius' trophies were laid at the feet of Art—they were measured, studied and sketched—their lives grandly given that in the end they might stand forth gloriously living in his canvasses, "vibrant with truth and the spirit of the wild."

As settlement gradually came into Wyoming, Carl Rungius struck out for the then untouched wilds of New Brunswick where moose were plentiful and a

still wilder scenery was opened before him. From there his trail led to the Upper Yukon, with a party organized by that beloved champion of wild life—the late Charles Sheldon. It was a scientific expedition more than a hunting trip, designed to broaden the little then known of the wild sheep of the Yukon Territory. The party went to Dawson, with the Ogilvie Rockies as the objective. Camp was established at Coal Creek, a tributary of the Yukon. Big game was plentiful and many a thrilling kill was made, some of the specimens being later placed in the collection of the National Museum at Washington. The story of this trip is told in Sheldon's book, "The Wilderness of the Upper Yukon."

The ability of this painter to put his subjects so vividly on canvas lies not alone in his understanding and love of wild animals, but in large measure because he himself knows and loves their environment. Outposts lure him, and Alaska he found the most beautiful land of all. His urge has been not only to paint these great creatures but to recreate them in their natural haunts, realizing how haunt and animal complement one another. And so he has made their haunts—whether rocky crag, snowy waste or untouched wilderness—his own. The whole desire of this artist has been to reproduce his great subjects with truth and beauty, and in achieving this height he has stressed the artistic quality of his work rather than its scientific significance. And he has succeeded in record-

"The Answer From the Barren"
(Moose, in New Brunswick)

"Alarmed"
(Mountain Sheep, in Alberta)

ing, in brilliant color, the story of our vanishing wild life with a skill few men can approach and none excel.

Past master of the art of woodcraft, Carl Rungius is a charter member of the Camp-fire Club of America, and it has been written of him that "no member of the Club is his peer as an outdoors man." Roosevelt once spoke of his painting of a bull moose as "as spirited an animal painting as I have ever seen." And another trail-mate says: "He is a delightful companion, a good hunter and indefatigable in his art." Elected an Associate of the National Academy of Design in 1913, and an Academician in 1920, Carl Rungius has exhibited at all the leading art exhibitions. His work has been awarded many prizes, among them the Speyer and Carnegie prizes at the National Academy. In addition to his animal paintings, his landscape work and etchings have received notable recognition. In all his painting Rungius has striven to produce harmonious works of art rather than scientific studies, and his phenomenal success is the best evidence how near he has shot to his goal.

A Life Member of the Zoological Society of New York, member of the Painters of the Far West and the Society of Animal Painters and Sculptors, Mr. Rungius maintains his studio-apartment in New York City, and a summer home and studio in Banff, Canada.

The New Grand Canyon Lodge at Bright Angel Point, on the North Rim of the Grand Canyon in Arizona

Opening Up the North Rim

Adventures in Building the Grand Canyon Lodge at Bright Angel Point

By Jack A. Bristol

THE north rim of the Grand Canyon, by reason of its inaccessibility, has for years been a land of mystery to most of the tourists who visit the Grand Canyon National Park, in Arizona. Where the great canyon wall breaks out over the vast Kaibab plateau on the north side, very few people have ever looked down into the depth of this masterpiece of nature—chiefly because it required about seven days to make the trip by stage and pack animal from Salt Lake City. In recent years, however, a new restlessness has gripped the touring public and travel to the north rim has increased, aided greatly by a system of motor transportation operated by the Union Pacific System. Now, to accommodate the increasing number of tourists to the north rim and to encourage others, the Union Pacific has constructed the Grand Canyon Lodge at Bright Angel Point.

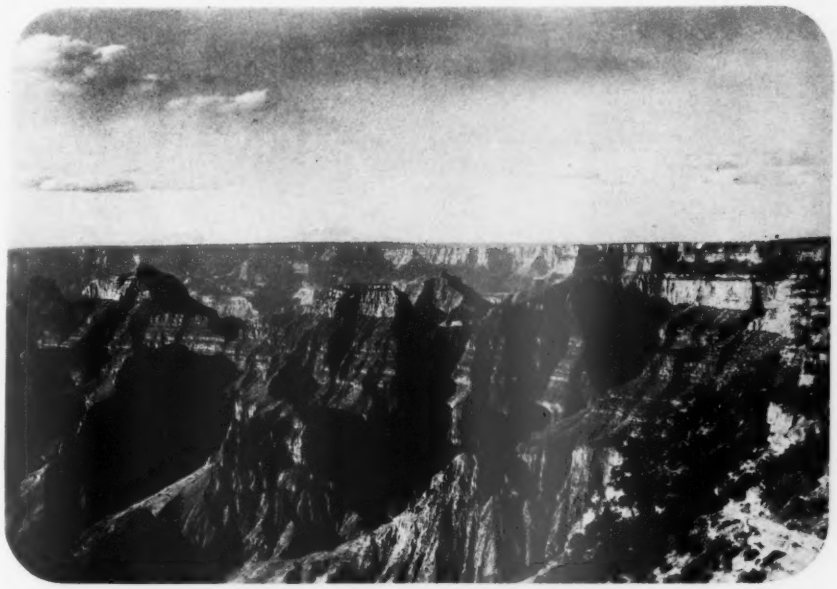
The new lodge, which was formally dedicated last September, is one of distinctive National Park character. The main building, consisting of lobby, lounge, dining room, and other general accommodations, has the appearance of being a part of the canyon walls, so well does it harmonize with its surroundings. Around the central lodge are sleeping quarters, more than a hundred cabins, each with two rooms. Native yellow pine logs were used in the construction of the lodge, with the exception of its hardwood flooring and the sash and door work of white pine.

Logging operations were not conducted in the park, as the National Park Service does not look with favor on the

felling of trees, even to build a beautiful lodge. But in the National Forests commercial cutting is permitted under Government supervision and regulations, so it was possible to secure the timber that was necessary in the adjacent Kaibab National Forest. It happened, however, that a new highway had just been surveyed through the park and many trees were cut to clear the right-of-way; these were used in the construction of the buildings. This arrangement was the proverbial killing of two birds with one stone, and it made an abundance of building material available with very little waste and no unnecessary destruction of park trees.

One of the first things that was done in building the lodge was to erect a saw and planing mill on the ground. This mill handled saw-logs brought in from the surrounding forests by truck, and handled them extremely fast. It was not uncommon for trees to be cut in the morning, brought to the mill and sawed into lumber, and the boards in their final resting place in the lodge before sundown.

The heavy snowfall on the Kaibab plateau added many problems to the building of the lodge, the greatest of which was that of keeping the road open for truck traffic. This was partly solved by placing stakes twenty-five feet high along the roadside, each stake carrying a cross-arm, one end of which was painted red. These red ends were "spotted" above the center of the roadway, so that when it was obscured by snow, the giant rotary snow plows could be driven directly under the red ends of the cross-arms, and thus stay on the road.



Looking down into the Grand Canyon from the little traveled North Rim which has been opened up by the construction of the Grand Canyon Lodge at Bright Angel Point

One terrific storm left only five feet of the high stakes exposed, and it required three weeks to clear forty-four miles, nine days of which were devoted to one seventeeen mile stretch. Two hundred and ninety gallons of gasoline were used to run the plow and its tractor these seventeen miles—but it got through, and the road was kept open.

Most of the trucking was done at night when the snow and the roadway beneath it were frozen. Thus the trucks did not bog down. But with the coming of warmer weather and the melting of the snow, the roadway became a morass into which ten trucks drove one March afternoon, to remain for six weeks. A Caterpillar tractor, sent to pull the trucks out, immediately settled in the mud. A search for enough horses to pull it out was futile, and there it remained until the road became dry. Meanwhile, the supply of gasoline at the construction camp was exhausted, and the sawmill, rock crusher, and concrete mixers stood idle until somebody could get through and replenish the supply.

Construction of the pipe line which supplies water to the lodge was another interesting incident. The water supply is Roaring Spring, four thousand feet below the lodge, in Bright Angel Canyon. The problem was to pump this water up to the lodge, a straight lift of 3,870 feet. To do this the pumps had to operate against a pressure of 1,900 pounds a square inch. It requires very good pipe to withstand this pressure, so seamless steel tubing, three and one-half inches inside diameter, was used. It came in sections twenty-two feet long, each of which weighed between 200 and 300 pounds. Some means had to be found to get this tubing, and all of the heavy machinery for the pump and power houses down into the canyon. A cable tramway was the logical answer to this question, but it presented many difficulties. In the first place, it could not run straight, because there were too many rugged cliffs. Consequently it must have angle stations. These are common enough in tramways, but the kind used during the construction of Grand Canyon Lodge established a new precedent.

Tramways consist of two cables, the large, tight one on which the carriers run as on a single rail, and a smaller one known as the traction cable, which supplies power to operate the tram. It is the traction cable that causes the difficulty in angle stations, where it must run through a pulley in order to make the turn and stay parallel with the main cable. In handling loads through these angle stations, a crew of men at each station detaches the fastener from the traction cable, and attaches it again on the other side of the pulley.

Since the appropriation for the job was limited, the payroll did not include these angle station operators, and some

means had to be found to run loads through the stations without them. This was done by placing long vertical steel rollers on the inside of the turns at each end of the angle stations. The traction cable ran over these rollers very neatly, and loads could swing through without any human attention whatever.

With the completion of the tramway, it was possible to go ahead with work on the pipe line. Sections of pipe were sent down the tram to as near the pipe line as they could be placed, and carried to their positions by manpower. Often it required ten men to carry these sections along the faces of cliffs and narrow ledges. They used one hand to carry the pipe, and the other to cling to lines dropped to them from above.

Most of this pipe was placed in a vertical position, or nearly so, and when it came to the edge of the ledge it was necessary to bend it. This was done by building big fires around the pipe at the place to be bent, and pulling the outside end down when the tube was hot enough to be ductile. Other joints of pipe would then be screwed together and lowered over the ledge, just as a pipe is put in a well, until it reached the next lower level, where it was attached by a flange to the pipe already in place. Then the crew would slide down the pipe already in place, and repeat the entire process on the next ledge. After it was in place, the pipe-line was securely anchored to prevent "whipping" when the pumps were started, and the terrific pressure was put against the pipe.

Securing sand suitable for mixing concrete was another serious problem. In the entire Grand Canyon there was no sand immediately available for this purpose, so sandstone had to be crushed to produce it. A home-made rock-crusher, activated by water power, was used in the depths of the Canyon, and the sand thus secured was carried by burros to the job. These burros carried their load in two small boxes, one on each side. Eleven shovels full of sand made a load for each box, and, according to the men who handled this part of the work, the animals would count the shovels. No animal, they declare, would leave with its load with only ten shovels full, nor would one ever wait for the twelfth. Eleven was the load, and the beast knew it—it would carry no more or no less.

On top of the rim, at the lodge proper, sand was even harder to secure. After wrecking the crusher twice, it was found that frozen stone would not crush, so a fire was started in a long section of currugated culvert about three feet in diameter, and rock from the quarry was piled on and around this. A fire was maintained, day and night, to keep the rocks warm enough to be crushed into sand. This process made sand cost as high as $17.50 a ton to produce, but it was essential to the job, and was produced at this figure.

These are but a few of the amazing tales that are told in connection with the building of Grand Canyon Lodge, which will provide comfort and luxury for tourists who forsake the beaten path for the romantic and adventurous North Rim of the Grand Canyon of the Colorado—the land of the mighty Kaibab plateau. Entire volumes could be written about almost any phase of the work. Keeping the road open during the great snows is in itself an adventure; the small sawmill, or the rock crusher, set down there in the midst of what is probably Nature's most astonishing piece of carving, is a tonic for the imagination; and those whose trend is toward engineering may dwell for hours on the novel method of piping water to the lodge. Most of all, however, must we consider the human element—strong and resourceful men who met conditions as they came. These men were never discouraged, although they labored in the face of what appeared to be unsurmountable obstacles. It was determination, pure and simple—determination to better National Park facilities, so that more people could see and enjoy the majestic beauty of the mysterious North Rim of the Grand Canyon in comfort and convenience.

Spring Fever

By JOHN B. MAY

The redwing calls from the alder spray above the swimming pool;
The sun beats hot on the sandy path—why must I go to school?
I hear the whistle of the quail, O'Lincoln's merry lay;
They call me to the woods and fields—no school for me today!

For what's the use of dreary books; who cares for Caesar's wars?
I know where nests the meadowlark; I've found the chipmunk's stores.
I'm tired of Egyptian art, "light-values," "color-schemes";
I've seen white birches 'gainst tall pines, beneath the sun's broad beams.

Geometry and history, Greek, Latin, ancient law,—
What matter these beneath the trees, with the west wind whisp'ring o'er?
I've watched the musquash build his hut, the high-hole carve his home;
Why should I read of ruins old, in Athens or in Rome?

The river flowing gently by,—the distant hazy hill,—
The blue above sparse flecked with white,—a tinkling sylvan rill,—
Grim ledges hid by columbine—cool nooks where orchids bloom,—
What fairer sights can teachers show, within a white-walled room?

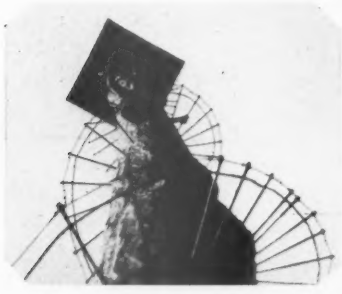
So I'm for the fields at the edge of the wood and the spring by the shagbark tree,
Where a sunny bank with daisies rank inviting waits for me;
On a soft green couch of meadowgrass I'll dream the hours away,
Until the veeries sing at dusk;—*No school for me today!*

"Going Up to 'See' In Trees"

By Henry B. Steer

THIS summer a forest ranger in the Indian Forest Service will climb daily to a cage atop a 170 foot Douglas Fir tree on the Quinault Indian Reservation in Grays Harbor County, Washington, and keep a close look-out for forest fires. From this look-out station, which is perhaps the most unique in the country, the ranger will have an unobstructed view of timbered and cut-over lands for at least thirty miles in every direction. With high powered binoculars he will scan the country for the tell tale wisps of smoke which mean forest fires.

The ranger will climb to his lofty perch by means of a steel rod and rope ladder which spirals the tree trunk and enters the house through a trap door in the floor. The house is glassed in on all four sides, giving an unobstructed view in all directions. In fine weather the windows may be pushed back since they are built in frames which permit them to slide back and forth. The house has two telephones, one connecting with the headquarters camp of a large logging company operating in the vicinity of the station, and the other with the District Ranger of the United States Forest Service at Lake Quinault, for this station overlooks a portion of the Olympic National Forest as well as the major portion of the Quinault Indian Reservation. In case the look-out reports a fire, men and equipment are immediately sent to extinguish it.



The start of the journey down

The tree is securely guyed by three steel cables, for even a small house seven feet square offers considerable wind resistance when it is 170 feet from the ground. The tree is nearly seven feet through on the stump and nearly two and one-half feet in diameter 170 feet from the ground at the point where the house was built. As a foundation for the house, four railroad ties were set in notches in the tree and securely bolted to the tree trunk. The house was then framed and built upon these ties.

The Quinault Indian Reservation in western Washington is very heavily timbered, many acres averaging over one hundred thousand board feet. Individual trees from six to ten feet in diameter and from two to three hundred feet in height are not at all unusual. The more common species are Douglas Fir, Sitka Spruce, Western Red Cedar, and Western Hemlock. The timber is mature and should be cut and as the reservation is logged, every possible means for the prevention and suppression of forest fires will be taken by the Indian Forest Service, for if nature is allowed to take her course unhindered by forest fires, satisfactory reproduction will be obtained.

The lookout descends by way of the spiral staircase from his lofty perch atop the trees

Tree Tips From Nature

By G. H. Collingwood

TO recall a forest vista where dogwood shimmers and tulip poplar lifts its green and orange cups to the sun, where white locust blossoms perfume the wind, or candle-like spires bloom in the boughs of the horse chestnut tree is to realize that spring flowers are not confined to small plants and shrubs. Some people walk with eyes that fail to see the tiny flowers, beech and elm twigs, or catkins that hang from the branches of oak, hickory, walnut, and poplar; but who has not seen pussy willows blooming?

Tree flowers differ in size, shape, and color; some are gay and showy while others are seldom apparent. All are evidence of nature's plans for coming crops of seeds, for trees like lesser plants must be perpetuated. Winds and insects aid unconsciously in their fertilization by carrying pollen from blossom to blossom. As the days go by the seed germs, cradled in the pistils of the flowers, develop until each is a mature seed with all the essential parts of a new tree.

Heavy seeds like walnuts, or light, downy cottonwood seeds all have an outer shell enclosing the embryo and the cotyledons or seed leaves which must be protected from drying out or from absorbing too much moisture. These cotyledons are filled with plant foods to nourish the seedling until its roots are able to collect moisture from the earth and its true leaves to manufacture food.

Most mature trees produce some seed each year, but a full crop is seldom annual. In fact, some trees bear heavy crops only once in five or seven years. The extent to which the tree has accumulated a reserve of food is one of the chief factors in determining the frequency of seed years. Trees of the same species generally produce seed at more or less common intervals, but vary considerably where the range of the tree is wide. Thus longleaf pine may bear a heavy crop of cones in southern Georgia and scarcely any in Texas, or the white pines of the Lake States will bear heavily while in Maine the trees may be barren.

The oaks seldom produce a full crop of acorns more often than once in four or five years, and several pines yield seed only every five to seven years. All the pines require two years for their seed to mature from the blossom. Black oak acorns also take two years, but white oak acorns mature during the fall of the first season. Juniper seed crops will average three years apart and beech from eight to ten.

Trees of medium age growing more or less in the open produce the largest quantities of good seed. Most forest

To grow and care for trees successfully one must not only know trees but the wonderful methods by which nature mothers them. "TREE TIPS FROM NATURE" is the second article of a series written to provide simple but needful information on the care of trees. The first article "How a Tree Grows" appeared in the May issue, and other articles to follow are:

The Planting of Trees and Forests
The Care of Young Forests
Protecting Your Trees Against Insects
Knowing and Treating Tree Diseases
The Why and When of Tree Pruning
First Aids in Tree Surgery
Shade Trees, Their Kinds and Care
Trees for the Roadside
The Making of a Town Forest
Memorial Trees and Groves

Each article, systematically planned in relation to the whole series, will be a delightful and helpful little journey into tree land.—Editor.

Blooms like these of the dogwood remind one that spring flowers are not confined to small plants

trees bear fertile seeds after about twenty-five years, although those growing in dense stands may not until nearly forty. On the other hand, many trees when cultivated in sheltered orchards begin to bear when they are six or ten years old and continue with remarkable regularity.

The Spanish oak dangles yellow catkins

This indicates that a tree must prepare for a season of full seed production. Until its height is attained, most of its energy is expended in growth rather than food storage. When the tree produces seed it draws heavily upon the starches and sugars that have been laid away in the roots and in the medullary rays within its trunk. This food supply has been largely gathered and prepared by the leaves and depends partly upon atmospheric conditions of the previous seasons, and partly upon the quality of the soil. Heavy seed crops may be expected following years of ample rain and warm sunlight which have encouraged the preparation and the storage of large amounts of food. Seed bearing is a heavy drain upon the tree. Occasionally death follows a large seed crop, but usually trees that die are already diseased or badly injured. The injury may have stimulated the tree to make a final effort to leave behind a large number of offspring. During the past ten or fifteen years badly diseased chestnut trees have been observed to bear unusually heavy crops of chestnuts for a year or two before dying. Orchardists have noted similar cases among fruit trees.

Nature produces seed with prodigal lavishness. Thousands upon thousands of seed are strewn upon unsuitable ground and die, while countless others are eaten by wild life. Scores of sycamore seeds are released from a ball no bigger than a large marble, the pepper-shaker capsules of the eucalyptus sow hundreds of little round seeds, the cottonwood dispatches thousands on parachutes, and the conifers disperse their winged seeds in legions. This explains why great numbers of seedlings may spring up on good ground where a few would have been enough, and most of them perish in the struggle for food and light.

Seed clusters and young leaves of American elm

Furthermore, the size of the seed in no way indicates the size of the tree. White pine and redwood trees outstrip others that start from seeds many times as large. As might be expected forest trees produce fewer heavy seeds than those of small size. A dozen cones from a pine or spruce contain as many seeds as are borne on the mightiest walnut. Their reproductive powers are even more and more astounding when one learns that pine seed are often eight-five to ninety per cent fertile. This is not a rule for all small-seeded trees, however, for tulip poplar trees and basswoods may bear seed of which less than ten per cent will grow. Immediately beneath the parent tree the seeds have small chance because the ground is occupied and all the resources of earth and sun are already demanded. Consequently, nature has conscripted winds, waters, animals, birds and insects to help transport them. The seeds of pine, spruce, and larch, as well as all the other conifers are winged. They whirl as they fall and the wind may carry them several times as far as the parent tree is high. Winged also are the seeds of the maple, ash, and yellow poplar, while the hornbeam and basswood have a leaf-like appendage that serves a similar purpose. Poplar and willow seeds are each provided with a small tuft of down that floats them miles on the wind. Around an elm seed a thin margin of membrane slows its progress earthward and discs it away. Seeds that fall in the early winter upon a crust of snow or ice glide long distances before the wind. The pods of the locust and other heavy seeds are occasionally scattered this way, and birch seed may drift in wind rows upon the snow.

The perfect flowers of the dogwood

Rivers and streams and floods all help distribute seeds that float. They also carry twigs and branches of trees like willow that may later strike root and grow. Birch, willow, elm, and cottonwood seed may float for days and be carried miles without becoming water-logged. Thus the offspring of trees that grow along the banks of streams and the borders of lakes may migrate long distances. Islands and sandbars along the Mississippi and Missouri rivers are covered with examples of this sort of seeding.

Seeds of trees that grow upon hills or mountainsides may roll to their new homes and in the far north or in high mountainous regions, glaciers and landslides play their part as seed carriers.

Among the animals, the squirrel is the most industrious planter. He buries nuts against the needs of the long winter, often carrying them far from their source and he finds them with surprising accuracy. One may wonder if his foresight does not extend beyond the winter and imagine he is deliberately planting trees for future squirrel generations. Instead of depositing the nuts in a central cache, he may run about excitedly carrying one, then dig a hole in which to conceal it. He carefully firms the soil with his paws and perhaps camouflages the spot by covering it with dried leaves. From among the scores of nuts some are never used by the squirrel or his family. Many of these sprout and grow into trees, which helps explain why nut trees are so widely distributed and are often found singly in forests of other species. Other small animals, such as field rats and chipmunks, also collect and store tree seeds and nuts. Their store houses or caches are frequently robbed by collectors who are seeking seed supplies for planting.

An example of vigorous young growth such as springs up beneath a forest of broadleaved trees

Chokecherries, black cherries, mulberries, and red cedar berries have a fleshy covering, which attracts the birds and so enlists their aid in the distribution of the seed. Larger animals carry away persimmons and pawpaws for food and man transports fruits and nuts long distances.

In temperate zones, autumn-maturing seeds usually demand a rest period before germination, so that most of them do not sprout until the following spring, and the seeds of many coniferous and broadleaf trees hold their vitality several years. On the other hand, white oak acorns, chestnuts, and others may germinate in the autumn soon after they fall to the ground. The nut or acorn lies on the surface of the ground partially covered by a few stray leaves. After it absorbs enough water to germinate, the taproot pushes down into the soil and grows for several weeks before freezing weather. In the spring the first leaves shoot above the old acorn which lies on the surface until all the nourishment is absorbed by the growing plant. Willow and poplar seeds mature in the early spring and are so fragile they must soon find a suitable bed or perish. They are not particular regarding the quality of the soil, but if it is uniformly damp, the seeds will sprout within ten days after they mature. Timely rains are always helpful in bringing this about.

Protection against fire and natural enemies encourages new stands of pine trees after logging

As if anticipating that seed alone might prove inadequate, nature has devised stump shoots, root shoots, natural cuttings from broken twigs, or branches and natural layering. Some of these methods are used regularly by a few trees and by others in cases of emergency. Nearly all broadleaf trees may send up sprouts from the stump when the cutting is done during the fall or winter, but only a few sprouts carry beyond the first season. It follows that only a few trees that sprout successfully reproduce in this manner. As trees grow older they usually lose capacity to send up permanent shoots. Chestnut has unusual ability in this direction. Before the chestnut blight found its way to America, sprout reproduction was generally recognized in the management of chestnut forests. European foresters have practiced this form of silviculture for genera-

tions and speak of it as coppice. Basswood, locust, and poplar together with ash, maple, and red oak all send up vigorous shoots often capable of developing into large trees, but only a few conifers, including redwood, cypress, and one or two southern pines, can produce sprouts of any description. The redwood stands alone in its ability to reproduce successfully in this way, for the sprouts of other conifers die back in a few years. Examples of satisfactory saw-logs less than sixty years old growing in a ring around a redwood stump are common.

During the first few years stump sprouts outstrip seedling growth of the same species. For instance, a chestnut stump sprout will grow as high in one summer as a seedling chestnut in five years. But the seedling usually produces a taller, finer tree. The sprout utilizes the root system of the parent tree for bringing in supplies, but it suffers from the ills that may attack the old roots and the exposed growing tissues of the old stump. Stands of timber resulting from stump shoots usually mature more quickly than seedling stands and eventually need to be reinforced with trees which have originated as seedlings. The management of sprout and seedling trees in mixture is referred to as coppice with standards.

These forty-year-old trees around an old stump show the unusual sprouting ability of the redwood

Beech, ailanthus, black locust, poplar, and hickory send up sprouts from their roots capable of developing into mature trees. These sprouts, or suckers, may come up from the ends of the roots fifty or a hundred feet away from the parent tree. On lawns they prove a pest, but they are invaluable as a means of reclaiming waste or washing land. Natural regrowth of willows and some of the poplars is frequently accomplished by what corresponds to cuttings. Buds or twigs containing buds become detached, find a suitable bed, send down roots, and develop into individual trees. Detached branches of catalpa, pieces of hackberry roots, and portions of some other trees may similarly develop dormant buds which root and grow. On high mountains, where the growing season is too short to develop a seed crop except at rare intervals, spruce and balsam resort to natural layering. After their lower moss covered branches have been pressed into the earth, roots develop and a shoot is sent up which may develop into a tree.

The natural reestablishment of the forest may be seen in many of the older settled regions of the United States. In New England and throughout the south fifty years ago the land was cultivated. Tumbledown stone walls, partly obliterated corn rows, and occasionally the foundations of an old home evidence the inroads of forests upon abandoned fields. Year after year, nearby trees scattered countless seeds upon the land. Thousands of seeds are eaten by birds and animals, others are washed away or fail to germinate, but after four or five years little tree seedlings push their heads above the grass. They may be far apart at first, but the seeds of other seasons fill the gaps. After a few more years the seedlings begin to grow in earnest. Their branches spread, interlace, interfere, and a forest canopy is formed.

The competition is keen, for without sunlight a tree is without energy to digest its food or resist the attack of insects and fungous diseases. Out of fifty or sixty thousand seedlings which may have started to grow on an acre of land, the weak and slow to start have been elbowed out by their fellows. Each succeeding year saw a few trees drop out. After twenty years or more the same area may have less than a thousand. Finally, the mature stand may have less than a hundred trees to the acre.

With each recurring season blossoms form high in the branches. The sun gives them strength while winds and insects fertilize them so that seeds may form and be scattered again with prodigal abandon. So the trees go on, struggling to hold the earth. The trees that we see are the survivors of hundreds of thousands of seeds and seedlings.

It would be carrying a simile too far to say that one must think like trees in order to grow them successfully, but assuredly one must know the laws of tree growth and make that knowledge his master guide in tree care. After all, Nature is the great teacher, whose processes of creation, wasteful though they sometimes are, light the way to real success and inspiration in the growing of trees and forests. Those who desire to delve deeper into the natural reproduction of trees will find many books dealing with the subject. Dean F. F. Moon's *The Book of Forestry* summarizes in a few readable chapters the way trees are reproduced, while Dr. J. J. Crumley presents similar information from the point of view of a practical yet philosophical forester in *Constructive Forestry for the Private Owner.*

FOREST PEOPLE

Photograph, Californians, Inc.

Mt. Tamalpais in Beautiful Marin County, California

California's Woman Game Warden

By MARIE PAKE

AN OAK tree stood on a solitary knoll in the Marin hills, near the road that leads to San Anselmo, California. To the casual observer, there was nothing about this particular tree to differentiate it from the thousands of others that dotted the green hills rolling away in all directions.

But to a young woman in woodsmanlike garb passing that way, it was another story. There was something about the appearance of the tree that aroused her suspicion. Looking closely, she discovered the leg of a deer protruding from the foliage. She gave a pull, and there fell to the ground the body of a young doe, shot through the heart. Did the young woman swoon, cry out, or give way to hysteria? She did nothing of the kind. She lugged the deer into the nearby grass and sat down to wait.

Dusk came. Hillsides and distant mountains purpled. The floor of the forest grew cool. The young woman settled herself more comfortably. A star punctured the deep sky above the tree. Others followed until the heavens were filled. Finally night sifted through the woods and enveloped the firmament. The young woman continued to wait.

It was almost midnight when three men parked their car on the roadside and approached the spot where they had previously cached their illegally taken young doe. Startled at not finding it, they looked nervously around—into the cool eyes of Mrs. Mary Sellmer, of Fairfax, Marin County, California, the only woman game warden in the state, and, it is believed, in the United States.

"You are under arrest," they were informed.

The Warden poses with "Pal"—her giant police dog, faithful friend and able ally

The culprits were marched into town and to jail, and subsequently paid a fine of $200 each—$100 apiece on each of two charges—possession of a female deer, and possession of a deer in the closed season.

Marin County has been designated "the garden spot of the world." Its sloping hills, spangled with profusions of multi-colored flowers with the golden poppy everywhere predominant, and its deep forest glades make of it not only a beauty-spot to pleasure seekers but a virtual paradise for wild life.

It is a world of unspoiled nature. Included in its hilly reaches are spots known and remembered by tourists the world over—Muir Woods where primordial redwoods, giants in girth and stature and years, people the deep forest dedicated to California's great nature-poet; Mount Tamalpais, reached by a funny little chugging railway, that, scrambling through scraggy slopes

and along precipitous backbones, brings up to where a far-flung pictorial map of San Francisco lies compacted; Sausalito with its front yard dotted with bobbing fishing-craft, and its back door opening upon wooded ascending hills; and dozens of woodsy, lovely dales unknown to fame but dear to the heart of the out-of-doors lover.

This peaceful Eden is protected from the wanton destroyer and wilful law-breaker by California's first and only woman game warden. Since she first pinned the star of authority on her blouse and shoved a pistol under her leather jacket in November, 1927, Mrs. Sellmer has brought to heel between sixty and seventy offenders, and secured fines running into four figures.

Mary Sellmer feeding her tame deer

Her courage, her feminine wile in the guardianship of the creature-lives entrusted to her keeping, the indomitable zeal of this plucky, high-spirited Western woman have won her high place in the annals of the outdoors. Standing five feet four in her boots and of a slight, delicate appearance, with blue eyes that belie the determination and fearlessness of her make-up, Mrs. Sellmer is anything but formidable in appearance. But those who have tried to buck her authority or beg off have found to their dismay that looks are no index to character. In a profession fraught with danger and discomforts, she braves elements and distances to "get her man," making her arrests in a straightforward and clean-cut way that has won the admiration of hardened old-timers.

An inherent love of nature, together with a childhood that built up courage and self-reliance, paved the way to Mrs. Sellmer's unusual profession. Left motherless at an early age, she grew up on a ranch at Dublin, California. With all out-of-doors for a nursery, she made friends with nature, bird and beast, learned the haunts of the forest folks, grew accustomed to human solitude and established companionship with mountain, field and sky. A crack shot, an expert swimmer, a dare-devil rider, she was chasing up the dawn on the back of one of her father's horses, while other children of her age were being sheltered from the cold world. Ranging at will over hillside and marsh, following the call of the wild, she was reading tracks and trails when other children were reading story-books.

One thing overshadowed her childhood. Each year she looked forward with dread to the coming of the hunting season. The autumn days were rendered sinister to her by the sound of echoing shots. Soon after she had finished school her father moved to a larger ranch in Alameda county, where his territory covered several thousand acres. It was in 1922 that, inspecting cattle on her father's place, she encountered a young game warden in search of offenders. The warden was Captain Walter Sellmer of the State Fish and Game Commission.

The companionship that began with their mutual love of outdoor life had its consummation in romance, and a few months later they were married. Captain Sellmer instructed his wife in the duties of a warden, and she accompanied him in many of his expeditions, and aided him in obtaining evidence.

Scarcely had the ink had time to dry on her commission when she made her first arrest, apprehending a man for killing game from a moving car. Three night hunters were rounded up a few days later by this intrepid woman, who, attracted by a strange light raking the hills, followed the clue and came to where two men were killing buck with the aid of a powerful spotlight. Single-handed, she arrested five Japanese youths at Tomales Bay on charges of having undersized striped bass. The Japs at first refused to submit to a woman's authority, but in the face of the warden's quiet determination, found it wise to change their minds.

Dressed as a school girl or an old woman, in extreme cases, Mrs. Sellmer has secured valuable evidence otherwise almost impossible to obtain. Violators of the law gunning about for tiny song-birds to be later served in an epicurean pot-pie, have paid scant attention to the little girl exploring around with her books and dog, and found out too late who the "little girl" was. Fishermen operating outside their rights in "abalone tide" at Tomales Bay have come to the bar of justice via the escortage of the little bent old woman, who with basket on arm, was poking about in the sea-weed.

Another phase of courage, coolness and nerve is called into play when a warden is summoned, as often happens, to the rescue of some wounded or injured creature. Mrs. Sellmer has traveled miles to the rescue of a hurt animal, either to administer first aid, or in extreme cases, to end suffering.

Sometimes she makes her capture with the aid of Captain Sellmer; sometimes, abetted by "Pal," her giant police dog and faithful ally; but oftenest, as in the best traditions of the Northwest Mounted—alone.

On And Off

—United States Forest Service

Even hard granite cannot stop the growth of a determined tree, as this lodgepole pine in the Sequoia National Forest in California clearly demonstrates

—Joseph Baille

Artistic tree treatment in China. Roots of an Ailanthus and Elm, grown together, are exposed to view

Years ago, near La Fayette, Indiana, a young hickory sprouted between two roots of an elm tree, and has gradually become encased. Despite the pressure, the hickory is today perfectly hardy

Right. The daddy of pecan trees, growing at San Elizario, Texas. This tree is 200 years old

THE TRAIL

—E. Mason

Twin Oaks, near Berwyn, Pennsylvania, one of the most unique cases of natural graft in the East

—Count Detalino Bragza Savorgnan

Near an old castle in the Province of Udine, Italy, the trunk of this old Linden tree is partly filled with roots and younger trees which have seeded there

—Hi Sibley

—W. G. Winchester

A great Douglas fir fell near Portland, Oregon, many years ago, leaving a stump twenty feet high. Seeds dropped into the stump and another fir sprouted, sending roots down the old decayed trunk

Left. A poplar tree's persistent search for life-giving water at Stoddard Well, California

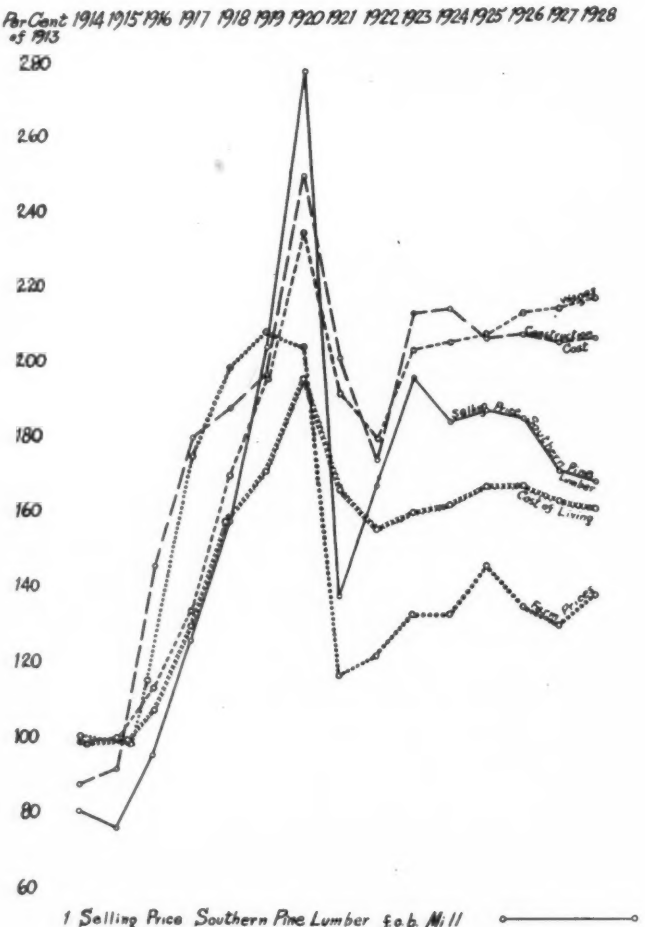
Next—Forest Relief

By Howard R. Krinbill

UPON the call of the President, the Congress of the United States convened on April 15 to grapple with the problem of farm relief. The present article is written to show that another industry, also with roots in the soil, is next in line for constructive consideration by Congress. Indeed, forest relief is so closely related to farm relief, especially on the 150 million acres which comprise the woodlots of our farmers, that it ranks as an important part of the same intricate land problem.

The need of forest relief is nowhere more clearly outlined than in our southern states, whose aggregate area of land chiefly valuable for timber crops, exceeds 200 million acres. The dominating tree species of the South, commercially, is the yellow pine. By and large the prices of farm products need to be increased 16½ per cent in order to square with present day costs of living. The price of lumber as represented by southern pine needs to be boosted 24 per cent to be on a par with the costs of labor and building construction. This comparison indicates at the outset that from the price standpoint the product of the forest is more in the dumps than the product of the farm.

The Price Trail of Southern Pine Lumber in Relation to Other Costs—1913-1928


Per Cent of 1913
1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928
280
260
240
220
200
180
160
140
120
100
80
60
Wages
Construction Cost
Selling Price Southern Pine Lumber
Cost of Living
Farm Prices
1 Selling Price Southern Pine Lumber f.o.b. Mill
2 Construction Costs (Steel, Cement, Common Labor, Southern Pine Lumber)
3 Wages (Common Labor and Factory Labor)
4 Cost of Living (Food, Shelter, Clothing, Fuel and Light, Sundries)
5 Farm Prices (Crops and Animal Products, 31 items)
Authorities: 1 Southern Pine Association
2,3,4,5 U.S. Dept of Commerce, Bureau of the Census
Drawn by Howard A. Krinbill

The chart on this page is presented to show in more graphic detail the relative position of southern pine lumber at the mill in relation to prices of building material, wages, farm products and the commodities commonly grouped under cost of living. A brief analysis of the chart shows that in 1928 farm prices were 139 per cent and the cost of living was 162 per cent of the 1913 level—a disparity of 16½ per cent—whereas the 1928 price of southern pine lumber was 171 per cent of the 1913 base as against 207 per cent for construction costs and 218 per cent for labor costs. The average of the last two items is 212½ per cent so that in the price struggle of the past fifteen years southern pine in 1928 trailed the increase in construction and labor costs 24 per cent.

Today southern pine lumber is averaging $29 a thousand feet at the mills. To stand four square with construction costs and labor costs it should be selling for $36 a thousand feet. Expressed in a different way southern pine lumber since 1913 has increased annually an average of 3.6 per cent as against 5.3 per cent for labor and 5 per cent for construction costs. These relationships are set forth in the table on the next page.

Why has southern pine failed to keep pace with prices in its companion industries? Increase of population, waning timber supply, increases in taxes, together with increases in cost of protection and reforestation, normally and logically, it would seem, should tend to advance the price of southern pine lumber far beyond the limits of construction costs and labor costs. To reproduce long-leaf pine, one of the most valuable of the

southern pine species, in rotations of eighty to one hundred years, will cost considerably in excess of $100 a thousand feet. Notwithstanding these large replacement costs, there seems little hope for adequate stumpage and lumber prices for our vanishing southern pine as long as there is an unlimited flow of low cost timber from the Pacific coast into the eastern markets in direct competition with southern pine. Pacific coast timber will undoubtedly supply 50 per cent of the nation's softwood needs for all time provided sustained yield is brought about in that region in the early future. Some forty years' supply of original growth softwoods still remains in the far West. Will this timber, much of which cost from a few cents to a dollar a thousand feet, continue to demoralize the eastern market?

Price Increases In Per Cent Based on 1913 as 100 Per Cent

Year or Period	*Southern Pine Lumber*	*U.S. Labor*	*U.S. Construction Cost*	*U.S. Living Cost*	*U.S. Farm Prices*
1913 (Base Year).....	100	100	100	100	100
1914-15-16 (Transition Period)	86	105	110	103	106
1917-18-19-20 (Appreciation Period)	192	185	205	165	198
1921 (Slump Year).....	139	193	202	167	118
1922-27 (Recovery Years)	183	205	204	164	134
1928 (Present).....	171	218	207	162	139
Average Yearly Increase 1913-1928 (15 years)...	3.6	5.3	5	3.3	2.2

Southern pine mills today are showing "net back to stumpage" (stumpage plus operating profits) of $9 a thousand. It is impossible, however, to replace high grade long-leaf pine stumpage at many times $9 a thousand feet. Based on March 1, 1913, values, or low cost of stumpage acquired years ago, southern pine mills are showing profits on their books, but it is safe to say that there is not a mill in the entire South, or indeed in the whole United States, that is making a penny of profit on the basis of reproduction cost of stumpage.

The two hundred billion feet of southern pine timber standing today will be practically exhausted in eighteen years at the present rate of net depletion. Continued unlimited competition of Pacific coast timber in the eastern market means cheap lumber, comparatively speaking. Cheap lumber spells cheap stumpage and cheap stumpage has always been the brother of forest waste. As long as it pays to waste timber there will always be wasteful logging and wasteful manufacturing. Only high stumpage prices and high lumber prices may be expected to usher in the millennium of intensive forestry. In the South intensive forestry will cost several billions of dollars and require more than one-half a century to bring into full swing. The South's present investment of $5,000,000,000 in timber, lands, plants, logging railroads and equipment ultimately would be increased to $12,000,000,000 under intensive forestry. Who will pay the bill for regulated production, re-stocking waste land, fire protection, interest on long-time investments and ever increasing taxes? It seems idle to talk about regulated production and cheap lumber when it is clear that the ultimate consumer, who is the great American public, will have to pay the bill through high lumber prices in the future.

Stand, Growth and Depletion of Principal Species, 1928

Millions of Feet, B. M.

Species	*Standing Timber*	*Annual Needs*	*Annual Losses*	*Annual Growth*	*Annual Net Depletion*	*Years' Supply*
Southern Pine.....	200,000	13,256	1,000	3,000	11,256	18
Southern Cypress...	16,000	865	....	....	865	18
Southern Hardwoods	269,000	10,027	1,000	4,000	7,027	38
TOTAL	485,000	24,148	2,000	7,000	19,148	25

We are off to a late start in the attempt to restore the waning forest resources of the South. To re-grow loblolly pine of saw timber size will require forty years, long-leaf pine eighty to one hundred years and the more valuable hardwoods fifty to one hundred years. Cypress will require centuries to re-grow. As against these time-consuming tasks the present supply of southern pine and cypress will last only eighteen years. The southern hardwoods will be exhausted in thirty-eight years. In brief the South's supply of soft and hardwoods at the present rate of depletion will last an average of approximately twenty-five years. These figures are expanded in the table given below on this page. The hardwood forests of the South constitute 85 per cent of the nation's hardwood supply. The West has practically no hardwoods and contributes less than one per cent to the hardwood markets. The North supplies approximately 29 per cent while from the South the nation today is drawing over 70 per cent of its hardwood lumber. Furthermore, it is to the point to note that the South produces our more valuable hardwoods, such as yellow poplar, oak, hickory, ash and red gum. The fact stands out that the country as a whole is dependent upon the South for valuable hardwoods needed for hundreds and thousands of special uses. White oak alone has over 300 special uses.

To balance growth and depletion the South must restock its forest lands, enlarge its stands of growing timber by 250 per cent and increase the rate of forest growth by 50 per cent. There is today little incentive for private enterprise to grow timber while there is a forty years' supply of cheap stumpage on the Pacific coast. The only solution of the present suicidal condition of the American lumber industry is the regulation of production and prices. Under the Sherman Anti-Trust law there can be no such regulation. Consequently, only Congress is able to remedy the situation and

perpetuate our vanishing forests. Congress must also appropriate sufficient funds to purchase and reforest the poorer cut-over lands which private enterprise even under higher lumber prices cannot afford to protect and reforest and which the states do not wish to acquire for state forests. The federal and state governments should acquire as promptly as possible sixty million acres of waste forest land in the South, leaving one hundred sixty-five million acres of the better forest soils below the Mason and Dixon Line for private ownership.

The purchase and reforestation of sixty million acres is a large order calling for not less than $600,000,000 and a quarter of a century of time. However, Congress appropriated nearly $400,000,000 to build fifteen cruisers in three years. If freedom of American shipping is worth $400,000,000, American forest independence, the foundation of most of our important industries, surely is worth $600,000,000. In the eighteen years which have elapsed since the passage of the Weeks Act the government has purchased approximately three and one-third million acres of national forests in the South. Thus far the southern states have acquired in the aggregate only about a million acres for state forests, making the total of state and federal forests in the South only four and one-third million acres, or seven and one-half per cent of the ultimate area which should be publicly owned in that region.

The southern states are capable of growing thirty-three billion feet of timber annually, or sixty per cent of the nation's needs. The future wood needs of our people should be provided by dependence upon the Pacific coast for fifty per cent of our softwoods, the North for thirty per cent of our hardwoods and ten per cent of our softwoods and the South for forty per cent of our softwoods and seventy per cent of our hardwoods. The vital importance of making every acre of waste land in the South productive of timber is apparent. To maintain its dominant position as the source of much of the nation's forest wealth the South must have higher stumpage prices, revision of state taxation on growing timber, eight times greater activity in forest fire protection, fourteen times greater activities by federal and state governments in acquiring public forests and twenty-five times greater forest area under conservative timber management by private owners.

The present is an age of lumber advertising, forest education, taxation studies and laboratory and field research. Unless through forest relief, constructively given at the hands of Congress, we soon bring about an age of real timber growing in the woods, we will continue to read in our morning papers press notices similar to the following:

Town is Up for Sale as Timber Trade Dies

West Eminence, Mo., November 24.—West Eminence is for sale.

At one time it was a thriving timber town, with a population of 2,000. Now it is almost deserted. Vacant windows stare from empty and run-down houses. Lumber mills, which once gave livelihood to most of the inhabitants, are idle and the machinery has been moved away.

Fifteen thousand acres of land, a small logging railroad and buildings are included in the sale offer. The owners ask $15,000 for the town and surrounding land.

Several towns have been obliterated by the collapse of the timber industry in the Ozark Mountains. Midco, a town of 1,000 a decade ago, is now deserted.

Saving a Giant Palm

By PERSIS LEGER

THIRTY years ago a palm tree, *Washingtonia robusta,* was planted on a private estate at St. Petersburg, Florida. It grew to be a magnificent specimen, measuring more than ten feet in circumference and reaching a height of fifty feet. Then the business district of St. Petersburg began to expand and enterprising skyscrapers encroached on this erstwhile residential property. It appeared as though the giant palm would be sacrificed to progress. But while the city was erecting its temples of business it was also laying out park sites. One of these, Baywood Park, on Tampa Bay, needed just such a tree. So Dr. Walter L. Wylie, Chairman of the City Park Board, arranged for its removal and transplanting. No palm of such great size had ever been moved successfully anywhere in the South, but after two days' work, trimming and balling the great mass of roots, it was carried out successfully.

This is the great palm which the expansion of business in St. Petersburg crowded from its original position. Though more than ten feet in circumference and fifty feet high, it was moved with great success to one of the city parks

EDITORIAL

War of the Lilliputians

THE unexpected landing in Florida of the Mediterranean fruit fly—deadly enemy of tropical and subtropical fruits—strikes home with renewed and dramatic force the fact that in the war between man and insects here in the United States, man is being worsted. Florida, with timely alarm, has dug in for battle. The Federal Government has mobilized its battalion of entomologists and Congress, with commendable promptness, has gone to its support $4,250,000 strong! If that sum is not adequate it should be doubled, trebled or quadrupled. The fruit fly must be promptly and effectively routed. The fruit industry and the welfare of the South from coast to coast is at stake.

This new thrust of our Lilliputian enemy, it is to be hoped, will awaken the American people to the need of eternal vigilance and combat upon tree insects and diseases, whether they be of the fruit, shade, or forest tree variety. One need only recall some of the havoc wrought among our trees in the past by these insidious enemies which man has failed to control. The chestnut has been almost blighted out of existence and white pine over a range as wide as the continent is threatened by the blister rust. Millions upon millions of trees in the northeastern states have been claimed by the gypsy moth, the spruce bud worm and the larch saw-fly. In the West billions of feet of timber have been rendered worthless by bark beetles. None of these major destroying tree enemies can be said to have been brought under control. As a matter of fact Western pine beetles in many regions are today a greater hazard than forest fire. Unfortunately, the state and federal governments seem to view them with a large degree of complacence.

A few years ago a serious infestation by the mountain pine beetle occurred on government land in Montana, threatening the vast lodge-pole pine forests of that state. The infestation was well established before the Federal Government with pitifully insufficient sums went to the attack. The result was a victory for the beetles, which spread over the continental divide and are now moving southward in the direction of Yellowstone Park, leaving in their wake thousands of dead trees as tinder for devastating forest fires. Similar stories can be told of other regions of the West where Uncle Sam's insect fighters are handicapped by insufficient money, men and knowledge. And so long as the government fails to control the beetle in its own forests, private owners are helpless to protect their forests.

Congress does not take forest bugs very seriously. It appropriates only about $200,000 a year for combat work throughout the United States. This is used mainly in attempted and usually unsuccessful control. Very little is available for specialized research. Insect control is expensive at best. Without adequate knowledge of the bug to be fought it is very expensive, sometimes scandalously so! Spending a few thousand dollars here and a few thousand there without adequate research is merely playing with the tree bugs. Sooner or later Congress must wake up to the fact that war with the insects is a real and not a play war!

Reorganizing Conservation

THE Secretary of Agriculture, writes William Hard in *Nation's Business* in a series of articles dealing with the reorganization of Federal Departments, has just two critically important inconsistencies. He has the Bureau of Public Roads and "he also has the Forest Service which controls our great Federal reserves of trees." . . . "Trees may be a crop," Mr. Hard continues, "but reserves of Federal trees would seem to belong more properly to the field of conservation along with the General Land Office and the National Park Service."

The most authoritative Federal reorganizers in Washington at this moment, according to Mr. Hard, would reorganize the conservation work of the Federal Government under an Assistant Secretary of Conservation in the Department of the Interior. The Department would be rechristened "The Department of Public Domain and Public Works" and its Conservation Division would include the General Land Office, the Bureau of Indian Affairs, the Geological Survey, the Coast and Geodetic Survey, the Forest Service, the Federal Power Commission, the Bureau of Fisheries, the Biological Survey, the National Park Service and the National Forest Reservation Commission.

The Forest Service would be transferred from the Department of Agriculture "because every inch of land which

it administers was given to it primarily not to be an hourly aid to business but a timeless reservoir of resources." The Indian Service would qualify for a place in the Conservation Division because "it deals with extensive Indian lands" and the National Park Service "because it conserves eternal recreational facilities." These reasons are typical of those used in Mr. Hard's grouping. To the professional organizer, the reasoning doubtless has logical appeal but to the conservationist it raises a storm of questions. In respect to the Forest Service and the Biological Survey, for example, where do trees, wild animals or birds receive consideration as living things; or in the case of the Indian Service, where do the Indians as human beings figure in the Federal Government's conception of conservation. One wonders also if these "authoritative reorganizers" see in the National Parks the glint of the sublime, inspirational story of creation, from which enlightened conservation may mold the greatest educational institutions of our nation.

The forest activities of the Government, now centered in the Agricultural Department, well illustrate the need of deeper study before launching upon the uprooting process of reorganization. The primary purpose of Federal forestry is to gather and to promote knowledge in the growing, care and utilization of trees as plant crops. That purpose gave birth to the Forest Service as a division in the Department of Agriculture years before the National Forests were set apart from the public domain. For a decade and more after their creation the forest reserves were under the administration of the Interior Department and were transferred to the Department of Agriculture in 1905 in recognition of the fact that forestry is basically the growing of a crop and therefore a part of agriculture.

It is quite true that the administration of the National Forests is an important function of the Forest Service, but it is only one of its many functions. It would obviously be ill advised to determine its status solely on the basis of the land which it administers and leave out of consideration its far-flung activities in promoting knowledge in the growing of trees on farms and private lands, its nation-wide cooperation with states and private owners in forest fire protection, its forest research through experiment stations in all sections of the country, its studies and promotion of wood utilization by industry everywhere. It is more to the point to consider how many farmers, how many industries, how many homes are in need of forest knowledge and forest products than how many acres of land Uncle Sam owns. Forest conservation as a dominant purpose of government will be best placed, we believe, where it will best promote the growing of forests by the people of the United States.

The reorganization scheme outlined by Mr. Hard, as it relates to conservation, however, seems to be based upon the theory that the Government's obligation in conservation is limited to and bounded by the land which the Government owns or the waters over which it has some jurisdiction. It denatures and dehumanizes conservation and reduces it to a contracted form of real estate management. To attempt to reorganize the conservation work of the Federal Government so that it may better serve the people of this and future generations is a commendable undertaking but to proceed on the conception that conservation is wholly a question of efficient administration of Federal lands is an unscientific and untenable approach. In its fullness of purpose, conservation is a biological and not a mechanical problem. Basically it deals with chlorophyl—the green substance of plants,—Nature's laboratory through which non-living materials are transmuted into tissue of the living plant. Shall it, therefore, as a Federal activity be allocated to a Department of Government representing the laboratory, plant life and the great field of crop production or to a Department which, according to Mr. Hard, represents ownership and control of land?

The Third House of Congress

ANYONE who is inquisitive regarding the legislative activities of The American Forestry Association or any other national organization with headquarters or representatives in Washington would do well to read "Group Representation Before Congress" by E. Pendleton Herring. Dr. Herring has made an exhaustive study of the business of lobbying which has evolved from a somewhat questionable activity to one which is a recognized part of national government. In fact, the representation of national associations numbering several hundred form what is frequently referred to as the Third House of Congress.

As Dr. Herring well points out, the lobbyist is no longer the insidious worker for evil interests, but is an authority on the subject represented by his association and in touch with other authorities who may be brought to present their ideas and information to special committees in Congress. At the same time, the executive officers of the national organizations are in a position to inform their memberships throughout the country regarding national legislation and give them opportunity to express themselves to their representatives in Congress.

Those in touch with the work of Congress realize that important decisions are made within the rooms of these committees more often than they are upon the floor of the Senate or the House. There is where thoughtful consideration of many matters of national importance is given, where laws are given a chance to live or, if considered undesirable, are given a quiet death. Although they have no official recognition in our constitutional form of government, representatives of national associations interested in these laws may appear before the committee. The extent to which these associations are represented at Congressional hearings depends largely upon the aggressiveness of their officially appointed representatives and the loyal interest of the members. Even a casual reading of this book helps to show why The American Forestry Association has achieved a place of recognized influence in matters of national legislation pertaining to forestry and conservation.

Oregon's New Reforestation Law

By Lynn F. Cronemiller

THE presence of an immense natural resource in any region or state has almost universally tended to an attitude of indifference on the part of the public, instead of a logically greater concern because there was more at stake. The history of timber exploitation in all parts of the United States proves this point. Oregon, however, in its forest policy, seems to have gone contrary to the usual custom in several instances, two of which are outstanding. The first was the passage of the first fire patrol law ever enacted in any state. This law, passed in 1913, definitely fixed the responsibility of the owner in the protection of his timber lands from fire. It provided that every owner of timber land should provide protection therefor from fire, and in case of his failure to do so, the State Forester performed the work and the costs became a lien against the land and were collected in the same manner as taxes are collected. This law has been accepted as the ideal in forest protection and has been copied by a number of other states in the Union.

Again Oregon went contrary to the usual custom when the 35th legislative assembly, which convened in Salem on January 12, 1929, passed one of the most progressive reforestation laws that has ever received the favorable consideration of any legislature. The outstanding feature of the Oregon law, and one wherein it differs from any reforestation law now on the statute books of any state, is the automatic classification of all lands that come within the definition of "reforestation lands." This one feature is considered essential to the complete success of any reforestation law. Under the Oregon law it is the inherent character of the land that governs its classification, not the wishes of the owner. The law states that reforestation land means any land more suitable for the growing of timber than for any other purpose, but upon which timber is not now present in merchantable quantities. When lands are so classified and

There are about two and one-half million acres of logged and denuded land in Oregon that will come under the provisions of the new reforestation act, but the four hundred billion board feet of merchantable timber is not affected by the new law

the order finally issued, they immediately become subject to the provisions of the law. The responsibility for classification is placed upon the State Board of Forestry.

Classification of the lands will present many problems. In the case of typical forest land where the timber has been completely removed or a selective system of cutting followed, there will usually be little question as to the classification, but in the marginal areas serious questions as to land use will arise. Is it better suited for agriculture, grazing or something else? Is the owner trying to get out from under a tax load by having his land erroneously classified? Another question will arise in many instances as to the determination of merchantable values. Cut-over lands in Oregon vary from the absolutely denuded type to second growth that has a marketable value and is now being logged. Numerous factors may determine merchantability such as the use of the timber, whether for pulp, Christmas trees or saw timber. Accessibility must also be considered to some extent. Small timber close to a city where there is a market for wood or poles might be termed merchantable, while a similar stand in an inaccessible region might be termed an immature forest. In several counties where second growth timber of questionable merchantable size has been assessed as merchantable timber, the tax levying bodies feared a loss of necessary tax revenue through the classification of such lands as reforestation lands. In order to assure them that it was neither the intent of the law nor the policy of the board to classify as reforestation land any land where the revenue accruing to the county would be seriously affected, a provision was included in the law that specifically excluded such lands from classification without the consent of the county court.

There are many acres of cut-over land in the state that are coming back to an excellent stand of young timber

Immediately the board determines what lands are to be classified as reforestation lands, a hearing is held in the county in which the lands are situated, at which time the owner, county officials or any interested individual may present arguments for or against the classification. These records are sent to the state tax commission, which considers them and issues the final order governing the classification of the lands. The revenues accruing to the counties under the law consist of a flat annual forest fee of five cents an acre and a yield tax of twelve and five-tenths per cent at the time of harvesting the forest crop. The term "forest fee" is used in order to get away from the idea that it is in any way a tax. Lands so classified are subject to no other fees or taxes, except the annual forest fee and the yield tax during the time they remain in such classification. No special road taxes, port taxes, school taxes or taxes of a similar nature can apply. However, values other than forest crop values, such as improvements, mineral deposits and values of a similar nature, can be taxed under the regular ad valorem tax laws of the state.

Immediately the timber becomes mature, it loses its classification as reforestation lands and becomes subject to all ad valorem property tax laws. Delay of the owner in cutting his timber following cancellation of classification in no way nullifies the county's twelve and five-tenths per cent equity in it. This tax must be paid whenever the timber is cut. Both the forest fee and yield tax are paid to the county and are then apportioned as the regular ad valorem taxes are apportioned. No forest crop can be harvested without a permit from the board, and the permit must state the unit value of the crop to be removed. During harvesting the owner must keep records of the harvesting of the crops and semi-annually report to the county treasurer the amount removed, including the amount of the yield tax then due.

Under any law it is almost certain that some abuses will creep in and the reforestation law is no exception. An owner may succeed in having his land classified under the law in order to get relief from just taxation. Or he may burn it annually with the idea that he is improving the grazing. Clearly the land is not being used for the protection of forest crops and hence is not properly reforestation land. Under such conditions the classification can be cancelled and the lands are then not only subject to the regular ad valorem taxes but any such taxes in excess of the five cents annually paid during classification which might have been extended

against the land, become immediately due and payable with both interest and penalty that attaches to such delinquent taxes. This applies only to land abuse and would not apply where the land value was enhanced through some unforseen circumstances such as a town site.

The contractual feature is included in the bill but it is not made effective until July 1, 1933. One purpose in deferring this date was that two succeeding legislatures might be able to view the benefits or weaknesses developed under the law and have an opportunity to change or modify it before any contracts are entered into. There has been considerable argument relative to the advisability of placing this section in the law, those opposed holding that it ties up land for a number of years at a definite tax rate, while tax rates on other property may vary widely from year to year. Such a condition may either penalize the state or penalize the owner. On the other hand, it is admitted that any man who goes into the business of growing timber must have some reasonable assurance that his tax load will be more or less regular. He must be able to calculate with some degree of accuracy just how much he is going to have to pay to produce his forest crops.

The state is well protected under the law. Not only are bonds required in certain instances, but a ten per cent penalty attaches through failure to make reports and remittances within the time specified by law. Failure to secure a permit to harvest forest crops or the making of false returns constitutes a misdemeanor and is punishable by either fine or imprisonment or both.

The situation in Oregon is ideal for embarking upon a definite reforestation policy. The present timber land area in the state is placed at between twenty-six and twenty-eight million acres, with the ultimate area of permanent forest land estimated at something over 21,000,000 acres. Few forest regions in the United States offer many opportunities for embarking upon a policy that will insure a definite sustained yield. Oregon has endorsed that policy through the passage of legislation that will encourage the private owner to retain title to his cut-over forest lands.

Forestry in Relation to Game

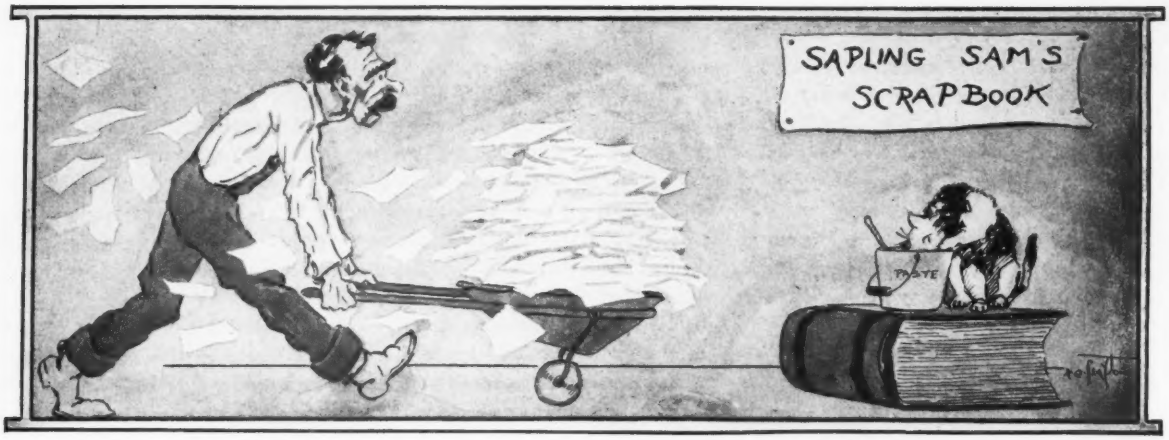
(*Continued from page* 326)

of wild life has a joint interest because it makes for natural conditions of wild life environment. It is the antithesis of fire, floods, and land famine. There are, of course, seeming conflicts between land management for forests and for wild life, but the instances where these cannot be readily adjusted are indeed rare. In its broad and basic approach, forest and wild life conservation is a collective undertaking that seeks to establish and maintain some semblance of productive natural conditions on the wild lands of this country. The task is too large and too urgent for individual effort or for diverting controversies over local issues.

By collective effort, the forest conservationist has quite as much to gain as the game conservationist because the wild lands of this country can be restored to plant and game productivity only by the development of a public will to protect and restore. Action is and must continue along two major lines. First, by the acquisition, protection and management of wild forest lands by the federal government and the states. Second, by the development of commercially profitable methods of forest and game management on privately owned forest land. Under the first heading come the national and state forests, game preserves and parks. Their administration and extension is dependent upon public support. The National Forests, set apart from public land in the West, are today the greatest reservoirs of wild life in this country. They provide the natural range for seventy-five per cent of the big game animals of the public lands states. Their existence has made possible the creation within their boundaries of 125 State game refuges, aggregating in area 19,500,000 acres. In addition, they include between two and three million acres in Federal game refuges and two million acres especially managed for game restoration. We need more state and national forests in the East not only for the influence they will have upon conditions of stream flow and natural environment but for the opportunity which they provide for game refuges. In the state of New York, 100,000 acres of the state forests eventually will be designated as game preserves. Furthermore, every state and national forest is an organized fighting unit against forest and woodland fires, and just that much more wild land reclaimed for orderly tree growth and game propagation.

Under the second heading falls the vast area of privately owned forest land in this country aggregating 370,000,000 acres. With few exceptions the owners of these lands must see a profit in their retention or else abandon them to idleness and the destructive play of fire and erosion. Their restoration calls for the best possible cooperation on the part of the forester and the wild life advocate. Except under the more favorable conditions, it is often difficult for the forester to assure a profit to the private land owner who undertakes commercial forestry. The same problem confronts the game conservationist. The two working together adjusting as far as may be practicable forest growth to wild life needs may demonstrate a profitable undertaking and thus bring millions of acres of private land into intelligent management and assured protection.

After all is said, forest and wild life conservation must stand or fall together on the issue of whether or not our wild lands are to be protected and rehabilitated. The average layman is too wont to consider wild life and forests as self-subsisting entities and overlook the fact that the foundation upon which they must be restored and maintained is the American soil, without which forests cannot root or wild life subsist. We must, therefore, see the problem as a land problem, keeping as our basic and common objective the restoration of lands whose highest use is forest and game production, outdoor recreation and the perpetuation of American vigor.



Educational Pictures

Guide to Nature clips this contribution to science from somewhere:

Excitedly the manufacturer of the "World's greatest insect exterminating powder" burst into the export manager's office.

"Hey!" he bellowed. "Have we got an agency in Egypt?"

"Why-er-no, sir."

"Well, why ain't we? I seen a movie of them pyramids las' night, and it says they was covered with millions of hieroglyphics."

"7 Come 11," and He Lost

The *Saginaw Daily News* prints this one with a Vancouver, B. C., date line:

The burglar got his first laugh and S. Izan, storekeeper got the last and best guffaw. "I'm still laughing," Izan says. The burglar recently broke into his store and took a pair of logger's boots. In the dark he picked up two boots, both for the right foot, one size 11 and the other 7.

They Do It Now!

"One interesting event of the millennium," says *Life,* "will be the spectacle of the mosquito and the camper lying down together."

One of "Nature's Noblemen"

A knock-kneed man by the name of Nelson, whose cabin was on the Mississippi bayou, had done a great favor for a certain stranger. The latter said to him: "Nelson, I'm a rich man, and I want to give you something—a house, a cabin boat, a farm—say what'll you have? You've pulled me through an awful fit of the blues."

"Stranger," drawled Nelson lazily, "if I had a cabin boat I'd have to take care of it. If I had a house, I'd have to live in it. If I had a farm, I'd have to pay taxes on it. If I had a new gun, I'd have to ile it and keep it clean. If I owned the biggest business in Saint Louis, I'd have to go to Saint Louis to run it. No, sir, I don't want none of 'em. I've got six coon dogs now, and couldn't use another. I don't owe ary cent for rent, taxes or grub. My huntin' license is perpetooal, and automatic, and fishin' is free. No, sir, mister, thankin' you all the same, they ain't nothin' a rich man can do for me."

All Wet

"Or by imprisonment in the county pail * * * * * * * (fifty) days * *" prescribes the *Journal of the House of Representatives* (Michigan.)

Don't Worry About California

The sun will blow up some day, say astronomers, at which the *St. Louis Star* figgers "That will be a terrible blow to sunny California."

Yeah, but they're used to blows. Listen what a California editor said of a lady who was moving away from his town: "She was one of the widest and best loved women in the valley."

'Spect He Uses a Club

"I treat 'em gentle or I treat 'em rough, according to their nature and their needs," says Prof. Huber, the New York flea-trainer, in *Time.*

A Chance for Research Men

The *Intermountain District Daily News* quotes *The Forest Pioneer* as yearning for the following articles for use at forest recreation camps:

1. A good cigar that will go out when dropped.
2. A cigarette without a fire in a "carload."
3. A match that will not ignite the forest floor while the igniter is roving about.
4. More campers who will bury their campfires when leaving.
5. Empty cans that can walk to the garbage pits unchaperoned.
6. Newspapers that will decompose when they are thrown on the ground.
7. A new type of animal scavenger to consume all lunch leftovers.

8. A water nymph to protect springs from being used as hand laundries, bathing pools, or private garbage pits.
9. A bullet-proof paint for signs.
10. A knife-proof coating for aspen bark to discourage the initial fiend.

Department of Science Education

Conducted by ELLIS C. PERSING

Natural Science Department, School of Education, Western Reserve University

How Teachers May Use Current Articles in This Magazine to Supplement Nature and Science-Study Textbooks Will Be Outlined in This Column Each Month by Professor Persing

THE suggestions for using the articles in this magazine will be given in a form that can be used directly by students and teachers in the upper elementary grades, the Junior High School and Senior High School.

Textbooks and courses of study serve as outlines for the science work in grades one to twelve inclusive. These outlines of essentials are necessary and it is not our plan to displace textbooks in any field of subject matter but merely to suggest a wealth of supplementary reading and visual materials which will enrich the present course and relate it to the experiences of the pupils. We are certain that the materials found in AMERICAN FORESTS AND FOREST LIFE from month to month will help acquaint pupils and teachers with the world about us and help them to keep up to date on topics of our forests and wild life.

Elementary School

National Parks—"Opening up the North Rim" by Jack A. Bristol (see page 342 this issue).

Would you like to read a few tales about building Grand Canyon Lodge? Perhaps you may visit this place some time. After you have read this article test yourself with these questions.

1. Why has Grand Canyon Lodge been constructed?
2. Describe the lodge.
3. How were building materials obtained?
4. How were the snow drifts taken out of the roads?
5. How was water obtained for the lodge?
6. What are tramways? How were they used?
7. How was sand obtained for mixing the concrete?

Birds—The Arizona Junco, by Robert S. Woods (page 337, this issue).

You are probably familiar with one kind of junco. Here is the story of the Arizona junco. Can you tell how it is different from the junco you know?

Junior High School

Trees—"Tree Tips from Nature" by G. H. Collingwood (page 346, this issue).

Trees are constantly struggling to maintain their place on the earth. By studying the ways they adapt themselves to different situations we are better able to help them.

1. Which group of oaks take two years to mature their acorns?
2. What are some of the forces of nature that help distribute the seeds?
3. How may some trees reproduce themselves without seeds?

Fish—"Big Game in Little Fish" by Frank A. Waugh (see page 327 this issue).

Have you ever gone fishing? What kind of fish do you like to catch? Here is an article that may help you catch more fish and enjoy eating them.

Can you answer these questions?

1. What are the three smallest game fish in America?
2. Why is the yellow perch a good game fish?
3. What is the best bait for perch?
4. What kind of hook and pole should be used?
5. How should the fish be cleaned?
6. Tell how to fry the fish.

Reforestation—"Oregon's New Reforestation Law" by Lynn F. Cronemiller (see page 359 this issue).

In connection with your study of reforestation you should read about the plan Oregon will soon put into operation.

1. How does Oregon protect its forests from fires?
2. What are the chief features of the Oregon reforestation law?
3. How are the forest lands classified?
4. Why is the situation in Oregon favorable for beginning an ideal reforestation policy?

Senior High School

Conservation—"Forestry in Relation to Game" by George D. Pratt (see page 323 this issue).

Here is an interesting article on the wild life in the forests. Prepare a report and give it before your class. Then see how many of the pupils can answer these questions.

1. How did the Romans regard the forests?
2. What is the story of "plundered nature in outdoor America"?
3. What is the aftermath of forest destruction?
4. How have the inland streams been changed in the last half century?
5. Why are the forests useful to the black bass?
6. How does deforestation change the soil and the wild life?
7. What is the record of forest fires in this country?
8. What is the problem of the forester in connection with the wild life?
9. Along what lines must action continue to save the forests and the game?

Game—"California's Woman Game Warden" by Marie Pake (see page 350 this issue).

Do you know the duties of a game warden? Have you ever heard of a woman game warden? Here is a thrilling tale of how Mrs. Mary Sellmer protects Muir Woods.

1. What did Mrs. Sellmer find by an old log?
2. How did she capture the guilty men?
3. Why were the men punished?
4. What was the early life of this game warden?
5. How did she learn the duties of a game warden?
6. How does she aid injured creatures?

Trees—Character in Trees by A. T. Jackson (page 333).

What is your favorite tree? What do trees mean to you? Read this article to learn what John Curtlin sees in trees.

To whom will you entrust

Practical training first. The experts shown above train all new men in the practical field work. Every new man must go through a thorough course of training and be proved out—no untrained men are ever used. These selected instructors are men of character, intelligence, and professional attitude

Tumbling Team—Davey Institute of Tree Surgery, 1928-29. Davey Tree Surgeons are athletic types. They are carefully selected with the idea of physical fitness. The nature of the work and their training make them more so. In addition to intelligence and character, they have physical energy; that is why they are diligent workers

LET us talk about *your* trees. They are living things, subject to disease, decay, starvation, insect attacks, mechanical injury and other ills. They are priceless to you—only time can replace them, long time at that.

Just for the moment, think of the most valuable tree on your place. Suppose it is starving. Wouldn't you, in self interest, insist upon scientifically trained experts who know what to feed it, and how, and when—without guessing or experimenting?

If this priceless tree is decaying in the trunk or limbs, and is growing steadily weaker, liable at any moment to break off or break apart in any high wind, wouldn't you entrust its treatment only to men with proven scientific knowledge and real personal skill?

If *anything* is wrong with that tree—and dozens of things might be wrong, because it is a living, breathing organism—wouldn't you demand reliable experts who are trained to diagnose tree troubles? Certainly proper treatment cannot be given without correct diagnosis.

You can trust Davey Tree Surgeons with a feeling of confidence and satisfaction. They are carefully selected and reliable men. They are thoroughly trained and have real demonstrated skill. They are educated scientifically in the Davey Institute of Tree Surgery, the only school of its kind in the world. They know how to diagnose the ailments of trees. Their knowledge and skill are based upon a half century of Davey experience. They are backed by a responsible business organization.

Scientific Training. A laboratory class at the Davey Institute of Tree Surgery—using high-powered microscopes and dissecting lenses to learn the sciences relating to their work. They must know the scientific reasons for all the things that they have been trained to do skilfully

Practical Training. This is a class learning the important art of saw filing at the Davey Institute. Every man is taught how to keep his tools sharp and in proper condition. Sharp tools mean good and rapid work. Practical training plus science means efficient service

your priceless trees?

Surprisingly low cost

In 1928, Davey Tree Surgeons served 21,608 clients from Boston to beyond Kansas City and from Canada to the Gulf. 76 per cent of these clients paid less than $100.00 each. The following table tells the story.

17,022 clients paid less than $100.00 each
2,223 paid from $100.00 to $200.00 each
1,642 paid from $200.00 to $500.00 each
721 clients paid more than $500.00 each

You can afford to employ the expert, reliable service of Davey Tree Surgeons for your trees. They will do as much work as you want—and no more. They will do their work right—they will save any tree that can be saved—they will give you professional and conscientious service. There is no charge except for working time, plus the necessary materials and expressage.

Davey service is local

Davey Tree Surgeons live and work in your vicinity. They are almost as conveniently located as your dentist or doctor or surgeon. They are not sent from Ohio for your individual work—they are trained in Ohio, but they live in your vicinity and work regularly for other nearby people.

Write or wire Kent, Ohio, for examination of your trees without cost or obligation. Permanent representatives are located in principal cities; the nearest one can serve you conveniently.

Everyone who sees Davey Tree Surgeons at work in the trees says, "They climb like squirrels." They certainly are remarkable climbers—they are trained to it. They get around in the trees with surprising agility and speed. But they use ropes—never injurious climbing spurs—to facilitate climbing, to prevent accidents, and to protect trees, wires and other property. They have diligence, speed, accuracy and a trained knowledge of their work

The Student Body of the Davey Institute of Tree Surgery, 1928-29, numbers 446 splendid young men in the Freshman, Junior and Senior classes, all selected from the proven men who have already been thoroughly trained in a practical way. The purpose of this resident school is to provide scientific knowledge and accuracy to supplement the practical skill that is given in the field training. This gives balanced education—Davey Tree Surgeons know both how and why. The Davey Institute of Tree Surgery has been in continuous operation for twenty years, the only school teaching the science of Tree Surgery. The Faculty of the Davey Institute of Tree Surgery includes 37 scientists and master Tree Surgeons.

JOHN DAVEY
1846-1923
Father of Tree Surgery
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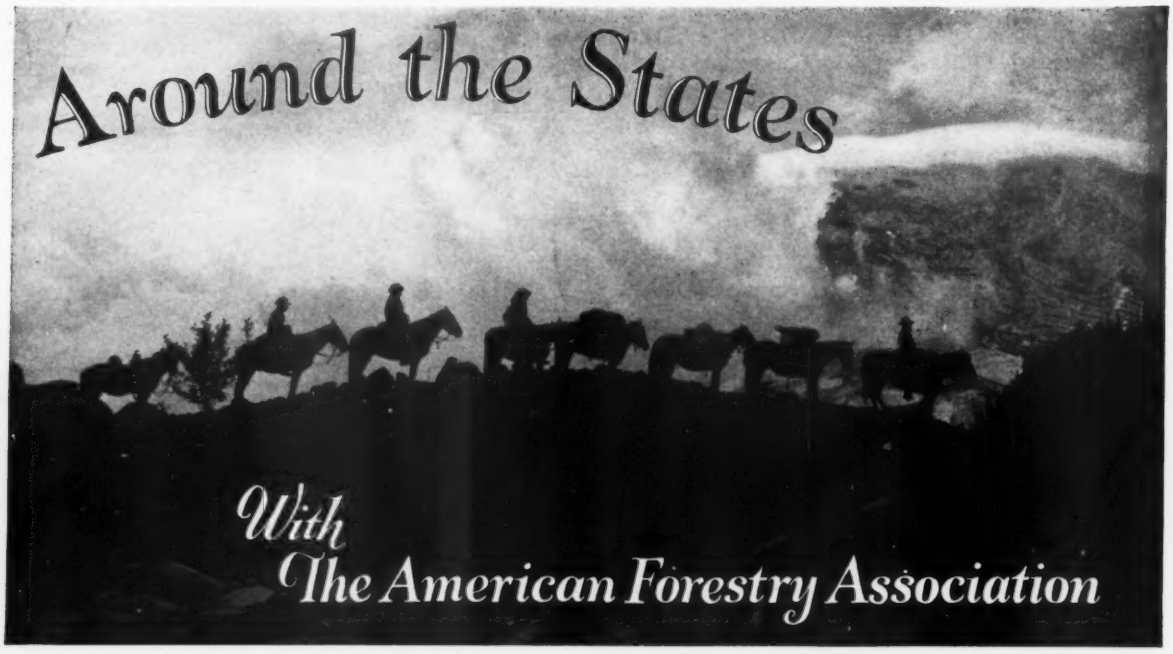

Name National Parks Committee

An advisory committee to assist the Department of Interior in the educational policy and development of the National Parks has been named. The formation of this committee, consisting of seven men conversant with the needs of the National Park system, was recommended in the report of the informal committee appointed by former Secretary of Interior Work in 1928 for the study of educational problems in the National Parks.

Dr. John C. Merriam, president of the Carnegie Institution of Washington, was named chairman. Associated with him are Dr. H. C. Bumpus, of the American Association of Museums; Dr. Vernon Kellogg, secretary of the National Research Council; Dr. Wallace W. Atwood, president of Clark University; Dr. Clark Wissler, Curator of the American Museum of Natural History; Dr. Isaiah Bowman, president of the American Geographic Society; and Dr. Frank R. Oastler, of New York, who has specialized in National Park work for several years.

William T. Cox to Organize Brazilian Forest Service

William T. Cox, superintendent of the Upper Mississippi River Wild Life and Fish Refuge, and former State Forester of Minnesota, has been selected by the Government of Brazil to organize a national forest service for that country. He will be assisted by Professor Don M. Matthews, professor of Forest Management at the School of Forestry, University of Michigan, and formerly Conservator of Forests in British North Borneo.

Mr. Cox has long been identified with the conservation work of both Federal and State Governments, having entered the United States Forest Service in 1901. He resigned in 1911 to become State Forester of Minnesota,

William T. Cox

which position he left in 1924 to engage in private forest practice as consulting forester and forest engineer. In 1925 he became superintendent of the Upper Mississippi Wild Life Refuge.

Professor Matthews, who will assist Mr. Cox, has devoted more than twenty years to tropical forestry work, both in the Philippine Islands and in British North Borneo.

Ray C. Steele, of Portland, Oregon, game protector of the Biological Survey, has been named to succeed Mr. Cox as superintendent of the Upper Mississippi Refuge.

California Passes Drastic Forest Fire Law

A bill authorizing the State Board of Forestry to designate hazardous fire areas within the State of California, and making it unlawful to build fires in such areas, except in established camp sites, has been passed by the California Legislature and signed by the Governor. It will become a law in June.

Under the new law, hazardous areas may be established upon the written petition of owners or authorized agents of more than fifty percent of the land, including public land, within the boundaries of any area of not less than ten thousand acres, upon which a fire hazard exists due to the presence of inflammable material.

When such an area is designated, it will be unlawful for anyone to smoke or build a campfire, provided, however, that the State Board of Forestry may establish camp grounds or camp sites within such areas wherein smoking and the building of camp fires may be allowed. Any person violating any of the provisions of this act will be guilty of a misdemeanor.

Designate "Primitive Areas"

In order to protect recreational values and areas for scientific studies, fourteen separate tracts, embracing parts of fifteen National Forests, have been designated "Primitive Areas" and "Research Reserves" by the United States Forest Service. All of the areas are in California. This action followed closely the decision of the Forest Service late in March to establish the wilderness area policy on the National Forests.

Middle Eel-Yolla Bolla: More than 200,000 acres around Yolla Bolla Mountain and at

the head of Middle Eel River on the California and Trinity Forests.

Agua Tibia: 27,000 acres on the west end of Palomar Mountain on the Cleveland Forest.

Desolation Valley: Some 41,000 acres north of Echo Lake and west of Lake Tahoe on the Eldorado Forest.

Salmon-Trinity Alps: About 130,000 acres at the headwaters of Trinity and Salmon Rivers on the Klamath, Shasta, and Trinity Forests.

South Warners: 75,000 acres around Eagle Peak in the South Warner Mountains on the Modoc Forest.

Hoover: 23,000 acres west of Mono Lake on the Mono Forest, named after the former superintendent of the Bodie mines.

Dana-Minarettes: 87,000 acres lying between Tioga Pass and the Devil Post Pile country on the Mono and Sierra Forests.

Murphy Hill: About 12,000 acres surrounding Campbell, Morris, and Lotts Lakes west of Belden on the Plumas Forest.

San Gorgonio: About 19,000 acres covering the San Bernardino and San Gorgonio range on the San Bernardino Forest.

Telegraph Peak: 7,500 acres around Telegraph Peak on the San Bernardino Forest.

San Jacinto: About 22,000 acres covering the high country east of Idyllwild and Keen Camp on the San Bernardino Forest.

Ventana: Some 52,000 acres of wild mountain land at the north end of the Monterey division of the Santa Barbara Forest.

Emigrant Basin: 98,000 acres on the Stanislaus Forest lying between Kennedy Meadows and the north boundary of Yosemite National Park.

High Sierra: About 700,000 acres including most of the High Sierra crest on the Inyo, Sequoia, and Sierra Forests, from Mount Whitney on the south to the Mammoth Lakes region on the north, a 75-mile stretch of wild, rugged mountains.

First Mother's Tree Boulder Dedicated

On Mother's Day, May 12, a boulder bearing an appropriate plate was dedicated at the first mother's tree on the shore of Antietam Lake, Reading, Pennsylvania. The tree was planted in 1923 by Solan L. Parkes, under the auspices of The American Forestry Association, and was dedicated in 1928. More than two thousand people witnessed the ceremony.

Forestry Schools Consolidated

The State Department of Forests and Waters and Pennsylvania State College have reached a cooperative agreement looking toward consolidation of the two forest schools now operated by the state at Mont Alto, and at State College.

In announcing the agreement, Secretary Charles E. Dorworth stated that plans for the consolidation have been under consideration for ten years and expressed the belief

Union Pacific

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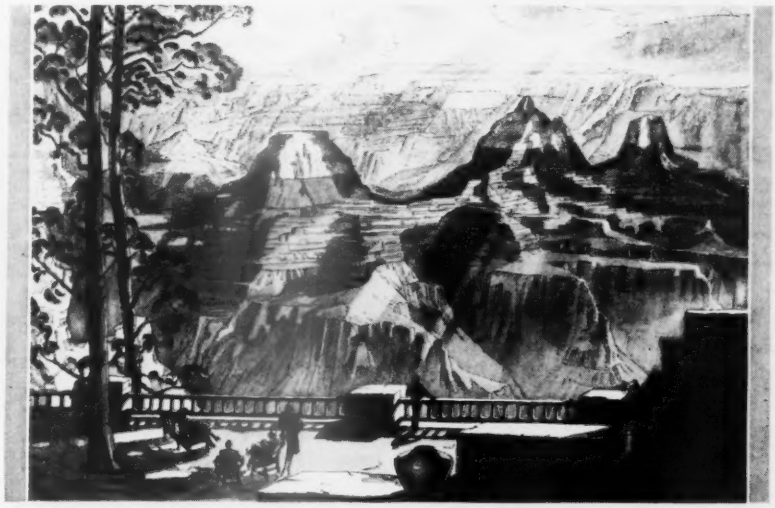

COME linger on this sunlit brink of immensity

Imagine it! To lose yourself in the contemplation of these glorious heights and vast, mysterious depths, drenched with countless rainbows of color, changing subtly with the course of the sun! To sojourn in luxurious Grand Canyon Lodge overhanging its highest brink!

Now Union Pacific makes it possible. The new Grand Canyon Lodge, from which this view was sketched, clings to the very edge of famous Bright Angel Point! Here you will relax, and amuse yourself, and draw strength from the marvelous climate. Here you will get an unparalleled view of this measureless chasm!

But Grand Canyon is only one attraction on the Union Pacific Utah-Arizona tour.

You will travel in easy riding motorbuses, to the prismatic labyrinths of Bryce Canyon—Zion National Parks and Cedar Breaks as well. It is a land of infinite variety. The Kaibab National forest inhabited by thousands of deer; strange Mormon villages and forts, extinct volcanoes, ruins of incalculable age. To see these is a never forgotten experience.

You may go independently, or on an Escorted All-Expense Tour, with interesting people from the world over. The trip is exclusive with the Union Pacific, and takes only five days after leaving your Pullman in Cedar City, the gateway. Shorter tours to individual attractions. The low cost will astonish you. No other vacation gives so much for so little—and with such economy of time!

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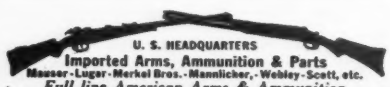
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that joining the two agencies will not only effect economies but also enlarge the professional and practical opportunities of the faculties and students. Under the new plan the school will be located at State College.

Wood Waste in Virginia

A Virginia survey of non-utilized wood products, conducted under the auspices of the National Committee on Wood Utilization of the United States Department of Commerce, by a special state committee, reveals that a total of 28,000 carloads is available annually as raw material for wood-using industries.

Under the chairmanship of J. P. Hummel, of Hopewell, Virginia, and the honorary chairmanship of Governor Byrd, the survey was conducted by means of a questionnaire mailed directly to sawmills, woodworking plants and allied industries throughout Virginia.

Indiana Passes Forestry Bill

The Indiana State Legislature has appropriated $100,000 a year with which to purchase, supervise and develop state forests and state forest lands, and to grow and distribute forest tree seedlings. This bill was signed by Governor Leslie on March 12. It includes about $15,000 for the state nursery work and the rest for the acquisition and administration of state forest lands.

Urge Protection of Wild Life

President Hoover's support of further legislation for the conservation of wild life in the United States, especially increased appropriations, was urged by a delegation representing various organizations having to do with wild life, who called recently at the White House.

The delegation consisted of George D. Pratt, president of the American Forestry Association; Frederick C. Walcott, who is interested in a number of wild life organizations, and Casper W. Hodgson, representing the Game Life Club of America.

Mr. Pratt stated orally that the President had been requested to favor larger appropriations to protect such wild life as migratory birds, fish, as well as the forests through various departments of the Government, including the Biological Survey of the Department of Agriculture, the Bureau of Fisheries of the Department of Commerce, and the National Park Service. An increase in the personnel of these departments also was asked.

Mr. Pratt said that under the Migratory Bird Act there are only twenty-four Federal game protectors in the United States, whereas in New York State alone there are 130 State game protectors. He favored an increase to seventy-five in the number of Federal game protectors to enforce the Migratory Bird Act. "Canada," he said, "is taking care of its part of the act but we are not taking care of our part."

SUMMER

Summer is again with us and most of us are getting our "Forestry" at first hand—with heightened appreciation—thanks to keeping in touch with nature through the winter and spring numbers of AMERICAN FORESTS AND FOREST LIFE.

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Prof. John W. Harshberger Dies

Dr. John William Harshberger, professor of botany at the University of Pennsylvania and the author of many books and papers on botany, died suddenly April 27. He was sixty-one years old.

Following graduation from the University of Pennsylvania in 1893, Dr. Harshberger received the Ph. D. degree at Harvard University, after which he made an extensive scientific tour of Europe, South America, Mexico, and this country. He became professor of botany at the University of Pennsylvania in 1911, having served as assistant professor since 1907.

Dr. Harshberger was a former president and treasurer of the Botanical Society of Pennsylvania, was president of the Philadelphia Natural History Society, and a director of the Geographical Society of Pennsylvania. He was a member of the American Forestry Association, the Pennsylvania Forestry Association, Academy of Natural Sciences, Botanical Society of America, Ecological Society of America, and the Pennsylvania Chapter of the Wild Flower Preservation Society. In addition he was a corresponding member of the *Societies pro Fauna et Flora Fennica* and a fellow of the American Association for the Advancement of Science.

He was the author of more than a dozen books and more than 320 papers on botanical subjects. He served as botanical editor of Worcester's New English Dictionary, of the *Botanisches Centralblatt* and of several other dictionaries.

Landing Fields on National Forests

The need for airplane landing fields and airports has been officially recognized for the first time by the United States Forest Service. This official recognition is in the form of a new regulation approved by the Secretary of Agriculture governing the use and protection of National Forest lands.

The existing regulation covering the issuance of special use permits for roads and trails has been amended to include airplane landings, reading as follows: "Roads and trails which are free public highways, and airports and air navigation facilities which are open to the free use of the public."

Permits may be issued to municipalities, companies or individuals. Where no charge is made to the public by the lessee, the permits are issued free of charge, but where a commercial business is carried on, the Forest Service will fix a reasonable rental charge.

Forest officers point out that all permittees under the new regulation of the Department of Agriculture must conform to the Air Commerce Act of 1926. Among the special stipulations to be included in all Forest Service permits are that authorized representatives of the Department of Commerce may inspect such airports, that whenever the President may deem it necessary for military purposes, the Secretary of War may assume full charge of airports within National Forests.

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First Competitive Ammunition	175	5
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Totals	868	35

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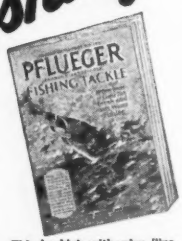

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Ask the Forester?

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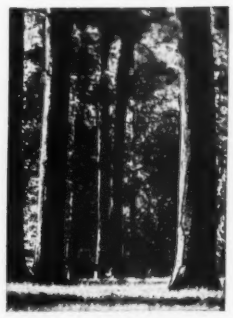


QUESTION: Twenty-five year old cottonwood trees growing on a ranch at an altitude of 7,500 feet commenced to come into bud in January and reached nearly full leaf early in February. This is not customary, but these same trees acted likewise on a previous occasion some years ago. Is there a known reason for this?—S. E. C., Wyoming.

ANSWER: It is doubtful if any one could answer this satisfactorily without being more familiar with local conditions as to climate during the past winter, soil in which the cottonwood trees are growing, or exposure or protection of the site on which they grow. If these trees are growing on a well-protected site with full benefit of the sun and warmth it is possible that growth was stimulated by a particularly warm spell in January.

QUESTION: What will prevent deer from eating off the tops of small conifers?—E. G. H., Pennsylvania.

ANSWER: Soft pitch mixed with slaughter-house refuse has served to repel deer in a good many cases. This must be applied to the tops of the little trees. Prickly crowns of tin have been attached to the tops of the trees with fair success.

QUESTION: Have young chestnut shoots a chance of growing to maturity? Will the blight be likely to return, and is there any method of combating it?—M. G., Pennsylvania.

ANSWER: According to forest pathologists there is a possibility that chestnut sprouts may develop an immunity against the disease. So far as is known, none of them have. Forest pathologists are watching the entire chestnut area for any indication in this direction. For that reason such chestnut sprouts and saplings as show vigor should be encouraged.

QUESTION: Where was the first town forest established in America?—W. A. M., Pennsylvania.

ANSWER: Fitchburg, Massachusetts under a state law, established a town forest of 109 acres in 1914. Today there are at least 250 town forests with an area of more than 500,000 acres, mostly in Massachusetts, New York, Pennsylvania, Connecticut, New Hampshire, and Vermont. Twenty-six states now have town forests.

QUESTION: I understand that the United States is to acquire a tract of land in southern Vermont for use as a national reservation. Can you give me any information concerning this reservation?—E. L. F., Vermont.

ANSWER: The National Forest Reservation Commission has approved a purchase unit in Vermont of approximately 300,000 acres, inside of which the government plans to purchase 100,000 acres. The exact location of the lands proposed for purchase has not been definitely determined, and as yet, little land has been acquired.

QUESTION: Will Sitka spruce thrive in western Pennsylvania and of what value is it as timber compared with other spruces? What is its height, diameter and shape when matured? Is there an embargo on its transportation from a nursery in Oregon to the State of Pennsylvania?—H. W. G., Pennsylvania.

ANSWER: Sitka spruce will probably grow in western Pennsylvania although it may not develop to the same size that it does in its native region along the Pacific Coast from Alaska through Washington and Oregon to Mendocino County, California. The tree attains a height of one hundred feet or more, and is often three or four feet in diameter. Occasionally, trees reach a height of two hundred feet with a diameter of fifteen to sixteen feet. These trees are conspicuous by the tapering trunk and strongly buttressed base.

We are not aware of any restrictions which would make impossible the transportation of Sitka spruce stock from a nursery in Oregon, although the nursery stock would have to bear the certificate of inspection from an Oregon authority before being released by the nursery.

U. S. Game Protector Honored

In appreciation of his fearless efforts to enforce the Federal game laws in Illinois, Kenneth F. Roahen, game protector of the United States Biological Survey, has been presented with a platinum watch and chain by the Chicago chapter of the Izaak Walton League of America.

On one occasion Mr. Roehen was ambushed by game-law violators on the Illinois River and seriously injured; he had been shot at several times by violators, and attempts had been made to destroy his motor boat and injure or kill him. Former Secretary of Agriculture Jardine commended his bravery last December in arresting two violators of Federal game laws, who, with two others, held guns on him for several minutes while he was attempting to apprehend them.

Bird Regulation Amendments Approved by President

Amendments to the regulations under the Migratory-Bird Treaty Act, under which the game and other birds that migrate between the United States and Canada receive protection in this country, adopted by Secretary of Agriculture Hyde on April 20, have been approved by President Hoover.

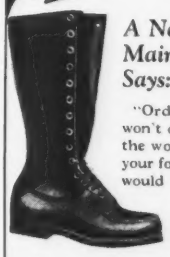
Hunting migratory game birds from automobiles is prohibited, and the close season is continued on greater and lesser yellowlegs. In addition certain further restrictions are made on scientific collecting, including a provision that restricts the taking of migratory game birds by scientific collectors to the period on any day from half an hour before sunrise to sunset.

The period November 1 to January 31 is established as the open season on mourning doves in Mobile and Baldwin Counties, Alabama, to take care of the peculiar existing local conditions.

In North Carolina the season on mourning doves is changed to the period November 20 to January 31, thus conforming with the State season on these birds and on quail, rabbits, and wild turkeys, and will facilitate enforcement of seasons and other provisions affecting upland game. Georgia is included in the group of Southern States having a split season on mourning doves—the dates being September 1 to 30 and November 20 to January 31. In New York the period October 1 to 31 is established as the open season for hunting woodcock, the same as in Vermont. A new waterfowl season from September 24 to January 7 is prescribed for Illinois and Missouri.

In Oklahoma the new migratory-waterfowl season is October 16 to January 31, the same as for the northern part of Texas. In the State of Washington east of the summit of the Cascade Mountains the period September 16 to December 31 is made the open season on waterfowl, the season for the rest of the State remaining unchanged.

A Message to SPORTSMEN



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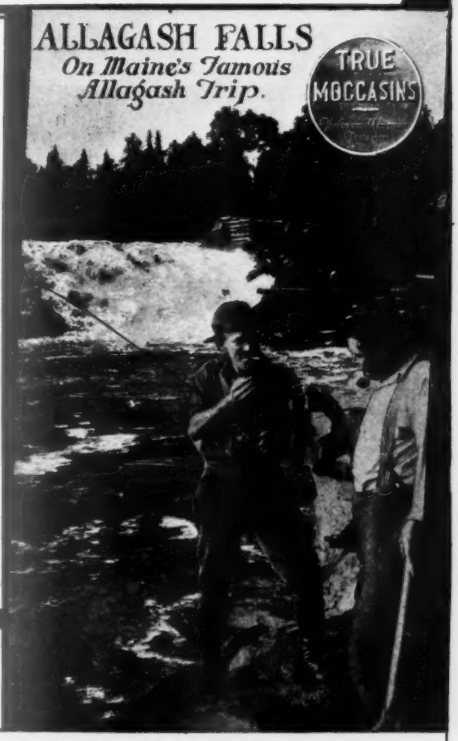

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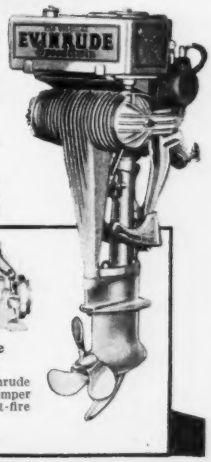

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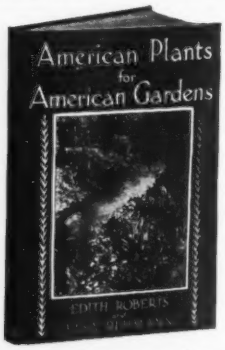

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Book News and Reviews

THE COMPLETE ANGLER. Izaak Walton. C. E. Goodspeed & Company, Boston, Mass.

Izaak Walton will always be a delight to those who enjoy "the contemplative man's recreation," and this new edition of this book with its attractive binding and well written preface by Bliss Perry is especially pleasing. There is much in it, also, for those who are interested in style as dissociated from subject-matter. The rich, old-world dignity of the author's sentences that often verge into a cadence very closely akin to poetry is one of the book's greatest charms.

With this really valuable contribution to the science of fishing, Izaak Walton has mingled philosophies, short moral discourses, excerpts from the contemporary poetry of his day and other seemingly extraneous material so skillfully that the continuity of his discourse is never interrupted. The quiet, rambling style is particularly well fitted to his topic.

That the book has survived the many later-day volumes that have been written on the same subject is only one proof of its intrinsic value. It is a welcome addition to any fisherman's or literary lover's library.—B. F. G.

The battle against white pine blister rust on two great continents is the subject of a new bulletin by Perley Spaulding, of the United States Department of Agriculture, a specialist in the investigation of this fungus disease which threatens the continued existence of the five-needled pines. "White Pine Blister Rust: A Comparison of European with North American Conditions," gives the results and observations of a tour through badly infested areas on the Continent and supplements earlier studies by the author published in 1911 and 1922.

How, by the adoption of improved air-seasoning methods, the average drying time can be shortened with a consequent faster overturn of stocks; shipping weights can be lowered and final moisture-content requirements more nearly attained, is set forth in "Air Seasoning of Western Softwood Lumber," by F. V. Fullaway, Jr., Herman M. Johnson, and C. L. Hill, forest products specialists in the Forest Service, in Bulletin No. 1425. The importance to the lumber industry of the West is evident by the fact that 35 per cent of the total annual cut of the principal western lumber producing regions is air seasoned, or approximately four and one-half billion board feet, with a rough valuation of $120,000,000.

PRINCIPLES OF FOREST ENTOMOLOGY. By Samuel Alexander Graham. McGraw-Hill Book Company, New York City. Price $3.50.

The most distinctive thing about this splendid text, which is the first one devoted exclusively to forest entomology in this country, is the reflected training of its author. Dr. Graham is both forester and entomologist, and throughout the work the reader notices his thorough understanding of the relation of insect control to the practice of silviculture.

For the forester or lumberman who will be interested in this book, as well as the professional entomologist, detailed notes on the classification, structure, and metamorphosis of insects is unnecessary. This type of reader is more interested in general principles and will profit by the author's use of well selected examples of North American forest insects and their economic importance in forestry. Should the reader wish to go further in the study of some particular pest, he will find a convenient bibliography covering a large number of species and classified to correspond with the titles of the various chapters in the book. An historical review considers the work of both European and American forest entomologists and points out that the men in this country are now working along lines of experimental biology and beginning to give a greater proportion of attention to insects which affect forest stands as against those which are principally important as shade tree pests. The author points out the important fact that forest entomologoical investigations have within the last few years been centered in the forestry schools as an integral part of forestry work.

Illustrations and diagrams punctuate the text and questions on literature are scattered throughout the chapters giving the volume particular value as a forest school text.

Many foresters and lumbermen throughout the country will want this new volume, and altogether it is as readable as the more serious type of magazine article.—S. W. A.

THE PRACTICE OF SILVICULTURE. By Ralph C. Hawley. Second Edition—Published by John Wiley and Sons. 335 pp. Price $4.

The growth of Professor Hawley's book on silviculture is a direct reflection of the growth of forest practice in America. If anyone doubts whether the technique of forestry in America is progressing they need only turn to this book and particularly to the imposing accumulation of references which complete each chapter.

This book presents the subject of silviculture as the foundation of forestry practice. For the most part it is distinctly American, and the author has made a real effort to get away from academic theorizing such as characterizes our earlier forest text books. This is accomplished as far as possible by basing the discussion of the several silvicultural systems upon experiences of American foresters working with American conditions. The book promises to fill a useful place among the textbooks of American forest schools, and as a reference for practicing foresters and managers of timberland.—G. H. C.

"Form and Development of White Pine Stands in Relation to Growing Space"—Harvard Forest Bulletin No. 13, by S. R. Gevorkiantz and N. W. Hosley. Harvard University Press, Cambridge, Massachusetts. This is an extremely interesting technical discussion of the results of the mutual interference of trees in a stand as governed by the available growing space and the ultimate effect on their entire development. Factors entering into the distribution of wood increment over the stem as influenced by external forces and the resultant varying forms are set forth clearly. There are interesting photographs and valuable charts, tables and appendices included.

THE RIM OF MYSTERY. By John B. Burnham. G. P. Putnam's Sons, New York. Price, $3.50.

This is the saga of a hunter who, in company with one "Andy" Taylor, a valuable aide, penetrated the uncharted wastes of Siberian Asia in search of a rare species of mountain sheep. Written in a direct and pleasing style, *The Rim of Mystery* recounts the author's stirring adventures among Eskimos, Chukchis, Japanese, and Bolsheviks in strange ports of the Northland, adventures when death and failure seemed often near at hand. The opening chapters, describing the voyage from Alaska across the Bering Sea, lend a thrilling prelude to the volume, for in "the pirate's cabin" motley soldiers of fortune swap romantic yarns.

Mr. Burnham has a sense of humor, the necessary patience of the explorer, an instinctive understanding of men and races and a true sense of beauty. Without becoming sentimental, he can describe the beauty of a raging torrent, stark mountains capped in fog, the gorgeous rainbow effect at the head of a glacier, rare blooms of Arctic flowers.

He covered 22,000 miles during his five months of travel over terrain so difficult that he and "Andy" wore out nine pairs of shoes. He was barred from the Chukotsk country by Bolshevik officials, who could not understand his mission, but he went in anyhow, and, let it be added, in the end he got his sheep!—A. C.

CALIFORNIA COPY. By George F. Weeks. Washington College Press, Washington, D. C. $2.50.

The memoirs of a journalistic old-timer who went West for his health in '75 and thereafter joined the ranks of the California boosters. After an active career as newspaper man and editor, Mr. Weeks, at the age of 74, chronicles his experiences and, incidentally, episodes in the history of the Golden State. The volume is, as its title suggests, "California Copy," preeminently of interest to Californians. Those interested in pioneer history also will find in it many interesting narratives and descriptions of the early days.—A. C.

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The Forest Post-Bag

So many letters of interest drop out of our mail bag each morning that the editors have decided to be generous with some of them. So—watch for the Forest Post-Bag, learn what "they" think, and share our pleasure and profit. Comment on this column is invited.

An interesting commentary on the ability of the walnut to exhibit or withhold its "temperamental intolerance" toward other plant life is a letter from Jacques Brynilsen, of Los Angeles:

"A curious and perhaps significant transformation has lately taken place in my yard. About five years ago, after exhausting a dozen or more so-called remedies and much work and patience to rid my garden spot of Bermuda grass—probably the most tenacious and troublesome weed in California—I bought a couple of English walnut trees in the hope of at least partly exterminating the pest. At first my scheme appeared more or less successful, but later developments proved that my cultivation and picking of the roots accounted for the small degree of success obtained toward the riddance of the 'devil grass.' On the contrary, I am beginning to believe that it enjoys the walnut environment. At least it has failed to exterminate the walnut trees, whereas it combats every other growth ravenously and successfully.

"At the time of planting the trees, I had a full-grown and vigorous hedge of Monterey cypress about four feet high, the one at the end having been allowed to grow to ten or twelve feet high. Not suspecting any antagonism from that direction, one of the walnuts was planted about four feet from and near the end of the hedge, with the result that the end of the hedge, including the larger cypress, has indulged in the juice of the walnut roots and died. At this time the large cypress had attained a height of about 15 feet.

"After noting many walnut groves surrounded by olive trees and palms, I had not suspected its antagonism to cypress, but now I am inclined to believe that the walnut root juices are toxic to pines, spruces and probably other resinous trees and shrubs as well as alfalfa, flax and perhaps many other field products.

"In my particular case, however, it is no great loss. In fact, I would rather have these two vigorous walnut trees than a dozen cypress hedges, dead or alive."

Another bit of damaging evidence as to the "intolerance" of the walnut comes in a letter from E. P. McCaslin, of Indianapolis, Indiana:

"Noticing in the *"Literary Digest"* an article captioned 'The Intolerant Walnut,' calls to my mind an experience of mine some ten years ago. On my neighbor's lot, about six inches from the property line separating our two gardens, was a thrifty young walnut with a trunk of about five or six inches diameter. It had sapped the soil (so I thought) till I could no longer grow anything within several feet of it. Then it was that a brilliant thought entered my head. I had a piece of discarded metal roofing two feet wide and eight feet long. I dug a trench a little more than two feet deep and eight feet long on my side of the dividing line between mine and my neighbor's lot, and set this piece of roofing, edgewise, into the trench so as to cut off any sapping of the soil on my side of the line by this young walnut tree. The metal sheet was about twelve inches from the tree and extended four feet in each direction north and south of the base of the tree. To my utter surprise there was no improvement whatever in gardening conditions, and until I noticed your article reprinted in the *'Digest'* could offer no tangible explanation as to why I got no results by my efforts to 'immunize' my garden. The following year my neighbors built a driveway alongside my lot, and I persuaded them to cut down the walnut tree, and immediately this part of my garden became as productive, if not more so, than the portion lying remote from the tree before the tree was cut, which I think conclusively demonstrates that the walnut tree is a 'hoodoo' to most other plant life by some other influence than drawing away the nutritive substances of the soil.

"When digging the trench to insert the 2 x 8 roof sheet, very few lateral roots were encountered growing from the walnut tree. It seems to be a tap-rooted species almost exclusively. I remember when a boy I could plow right alongside a walnut stump, while most other species would stop operations from several inches to several feet away from the stump."

Timber Pays for City's Watershed

As early as 1896 the city of Little Falls, New York, began to purchase land at the headwaters of Spruce and Beaver Creeks—so that it might ultimately control the city's watershed. Today municipal ownership of 4,003 acres of forest protects the water supply and timber now being cut on the property will pay off all expenses entailed in establishing the watershed. The timber now being logged was selected so that its removal will not impair the value of the area. It is being sold to a concern specializing in high-grade lumber for piano sounding boards.

Michigan Graduates Follow Forestry

An analysis of alumni records by the School of Forestry and Conservation of the University of Michigan reveals that more than two-thirds of the graduates are now engaged in professional forestry work or in businesses and industries handling forest projects. The Federal, State, and Canadian governments are the largest employers of Michigan foresters, eighty graduates being located with the forest services of these three agencies. Twenty-three are teaching and twenty-one are employed by industrial firms for reforestation, fire prevention and logging work. Sixty are in branches of the lumber business.

Plant Asiatic Trees

Thirteen hundred seedling Asiatic chestnut trees have been planted by the United States Forest Service in the Arnolds Valley of the Natural Bridge National Forest. This is a test to find a tree which will stand the ravage of the blight, which has practically denuded the mountains of the native chestnut.

Arboretum Committee Named

Secretary Hyde has appointed the following committee from the Department of Agriculture to confer with the National Arboretum Advisory Council, required by the act establishing the Arboretum: Dr. A. F. Woods, director of Scientific Work; Dr. W. A. Taylor, chief of the Bureau of Plant Industry; Major R. Y. Stuart, chief of the Forest Service; Dr. Frederick V. Coville and Dr. W. T. Swingle, of the Bureau of Plant Industry.

The Arboretum, which Dr. Coville has described as a "living library of plants," will be developed on a large tract of land in the District of Columbia, which includes reclaimed land near the Anacostia River above the Benning Bridge. It will be used as a center for scientific research in the breeding and hybridizing of trees, and similar experiments.

Izaak Walton League Urges Forest Fire Protection

Endorsement of the principles of the Englebright Bill for adequate forest fire protection on the National Forests was the outstanding forest conservation resolution adopted by the Izaak Walton League of America at their annual meeting at Chicago, late in April. Additional appropriations were also urged for state aid in forest fire protection, under the Clarke-McNary Act.

George D. Pratt, President of The American Forestry Association, speaking at the last day's session, declared that many of the nation's resources are being ruined by the thoughtless works of man. During the last century, he said, the American people have wrought vast changes in the surface conditions of this country—changes which in instances all too numerous have dissipated the building power of nature and diverted it into insidious channels of destruction. He condemned the turning of refuse into rivers and streams, causing the death of young fish.

Dr. John C. Phillips, of Boston, President of the American Wild Fowlers, discussed the "American Sportsman's Bag." An average of 8,000,000 wild fowl is the maximum annual kill that should be made by American hunters, he said.

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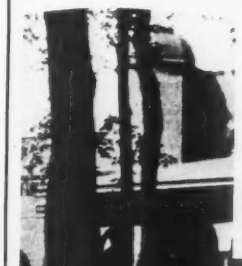

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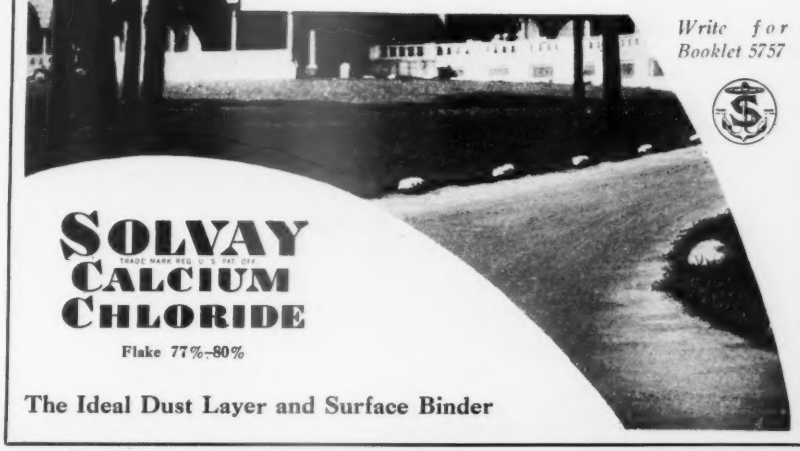

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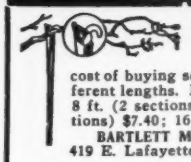

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Dr. A. C. True, Dead

Dr. Alfred Charles True, specialist in agricultural instruction, Office of Cooperative Extension Work, Extension Service, died in Washington, D. C., April 23. He was seventy-six years of age.

During the forty years of his services in the Department of Agriculture, Doctor True was associated with agricultural research and extension education conducted cooperatively by the State agricultural colleges and the department. Also he contributed to the development of resident instruction in the land-grant colleges.

Reforestation in Mexico

An experiment in reforestation on a large scale has been authorized by the Mexican Secretary of Agriculture, according to a report to the United States Department of Commerce from the Acting Commercial Attache at Mexico City, A. F. Nufer. The report states that 15,000 acres in the vicinity of Apam, State of Ridalgo, have been secured for the purpose and more than 2,000,000 trees of various kinds will be planted. This region, previously devoted almost entirely to the growing of agave or century plants for the elaboration of pulque, has been selected, as the Bureau of Forestry wishes to demonstrate to the landowners in that region the advantages of reforestation on their properties.

Indiana Enlarges Forest Nursery

Three acres will be added to the five-acre tract comprising the Indiana state forest nursery in Clark County, to meet the heavy public demand for trees to be used in reforestation projects, Richard Lieber, director of the Conservation Department, has announced.

The area now under intensive cultivation contains more than 2,000,000 small trees, and plans being developed will provide beds to accommodate an additional 3,000,000. These trees will be ready for planting in 1932. Much of the stock being raised will go toward planting thousands of waste acres in southern Indiana and establishing forests upon the sandy soil of the Kankakee region.

Forest Jobs for Disabled Veterans

The state of Pennsylvania and the American Legion are cooperating in a project intended to solve at one time the problems of caring for its more than one million acres of public timber land and rehabilitating World War veterans fighting tuberculosis.

Two cabins have been built, the first of a number that are planned, at high altitudes in the forests, where the disabled veterans may live, and pass their time caring for the trees.

Georgia Forestry Meeting

The Georgia Forestry Association will hold its annual meeting at Brunswick, Georgia, during the first week in June, according to C. B. Harman, of Atlanta, president of the association. The program committee is composed of Bonnell H. Stone, Howard E. Coffin and C. A. Cobb.

Ranger Commended For Rescue

Secretary Hyde, in a letter to Forest Ranger August Rohwer of the Humboldt National Forest, Nevada, has commended him highly for the rescue of three air crash victims during a heavy wind and snowstorm with the temperature below zero.

Word had gone out that a Boeing mail plane, en route to Salt Lake City, had been lost. Rescue planes located it jammed against a windswept ledge of rock in the Ruby Mountains, and Ranger Rohwer, leaving his station that night, led a party of ranchers on horseback to the rescue. The men had to take turns leading the way on snowshoes, making tracks for the horses to follow, and only the best horses could buck their way through the storm and deep drifts.

The wrecked plane was reached early the next morning and the pilot found in a semi-conscious condition. The two passengers were suffering from shock and cold. Rohwer had the victims bundled up and put on horses, then for six and a half hours the rescue party battled the blizzard until they reached a ranch.

Chamber of Commerce Considers National Policies of Conservation

A round table conference to discuss government policies relating to raw materials and water power was prominent in the program of the Seventeenth Annual Meeting of the United States Chamber of Commerce. Dr. John C. Merriam, president of the Carnegie Institution, was chairman, and Major R. Y. Stuart, Chief of the Forest Service, opened the discussion on forests with two questions fundamental to the development of American forests. The first of these, he declared, is comparable to problems existing in the oil industry and deals with the profitable utilization of existing timber. The second question put forward by Major Stuart could deal only with a growing crop such as timber, for he asked, "How can our waste and idle lands be made to grow trees profitably?"

Everett G. Griggs, president of the St. Paul and Tacoma Lumber Company; Judge William S. Bennet, and Senator John Thomas also spoke on the conservation of forests for their continued use. A considerable part of the program had to do with possible modifications of the anti-trust laws to enable producers of oil, bituminous coal, and waterpower to cooperate in their conservative development.

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Forest Economists Needed

Announcement has been made by the United States Civil Service Commission that examinations will be held this summer for forest economists of various grades, ranging from assistant forest economist at $2,600 to $3,100 a year to head forest economist at $6,500 to $7,500 a year. The positions to be filled are in the Forest Service.

The lowest grade requires at least two years of post graduate study and research in forestry or economics, or a degree in either forestry or economics and acceptable practical experience. The grade of head forest economist requires scholarship equivalent to that represented by a Ph. D. degree in forestry or economics from a college or university of recognized standing, or the equivalent in research of a scientific or administrative character. Applications will be received by the Civil Service Commission until May 29.

Cecil Resigns From Forest Service

George H. Cecil, Supervisor of the Angeles National Forest, California, has resigned to become Executive Secretary of the Los Angeles County Conservation Association. Mr. Cecil has been connected with the Forest Service since 1903.

William V. Mendenhall, Supervisor of the Santa Barbara National Forest, California, succeeds Mr. Cecil as Supervisor of the Angeles; S. A. Nash-Boulden, Supervisor of the San Bernardino National Forest, California, goes to the Santa Barbara; J. E. Elliott, Supervisor of the Cleveland National Forest, California, becomes Supervisor of the San Bernardino; and L. H. Anderson, Assistant Supervisor of the Angeles National Forest, has been made Supervisor of the Cleveland.

Appalachian Trail Conference

The annual meeting of the Appalachian Trail Conference was held at Easton, Pennsylvania, May 10 and 11, jointly with the Blue Mountain Club of Pennsylvania and the Lafayette College Outing Club. Easton is near the point where the Appalachian Trail crosses the Delaware River. Among the speakers were Major W. A. Welch, Honorary President of the Appalachian Trail Conference; M. H. Avery, President of the Potomac Appalachian Trail Conference, and Colonel Henry M. Shoemaker, editor of the *Altoona Tribune.*

Idaho to Have State Forester

The Idaho Legislature recently passed a law providing for the employment of a State Forester by the Cooperative Board of Forestry. The State Forester is to be a technically trained man, appointed by the State Board of Land Commissioners, under whose direction all forestry work is undertaken.

Additional legislation contemplates the division of the State of Idaho into reforestation districts, within which the owner of cut-over lands may petition the State for cooperation, with the understanding that they will share in the costs of protection. The lands will be assessed for purposes of taxation at the rate of one dollar per acre and the timber when cut will pay a yield tax of fifteen per cent on the stumpage values of material. Areas placed under the provisions of this law may not be grazed, must be protected against fire, and cuttings may be carried on only for domestic purposes, except after filing notice with the State Cooperative Board of Forestry.

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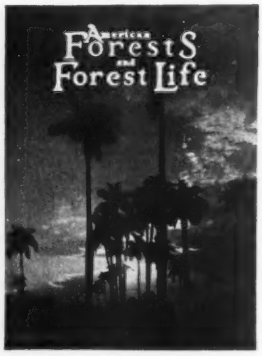

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Harrelson Succeeds Phillips in North Carolina

Colonel J. W. Harrelson, professor of mathematics at the North Carolina State College, succeeded Major Wade H. Phillips on April 1 as director of the North Carolina Department of Conservation and Development. Major Phillips returned to the practice of law. He had served the department for three years.

Improved Fire Pump

With foresters everywhere preparing for the 1929 forest fire season, announcement has been made of an improved fire pump, the chief features of which are lock-seamed tank, moulded hose, and a larger diameter cover.

The pump, an Indian Fire Pump, is equipped with a five-gallon tank with a large brass strainer and cover. It consists of two heavy, seamless, brass cylinders — one working back and forth inside the other. The improved pump is reported to be extremely powerful, throwing a long-distance solid stream of water fifty feet.

Cruising Department Organized

J. Frank King, for the past ten years head cruiser for the Long-Bell Lumber Company in its western operations at Longview, Washington, and Weed, California, has resigned to take charge of a cruising department which is being organized by Mason and Stevens, forest engineers, of Portland, Oregon.

The entry of Mason and Stevens into the timber cruising field is a departure from the past practice of this firm. Mason and Stevens' principal activity in the past has been entirely associated with long-time management plans for forest properties involving the use of facts about tree growth. Recent developments with these plans have shown great financial advantages in selective cutting, forcing an even more intimate knowledge of virgin timber stands.

New Studies in Forest Economics to be Launched

With funds provided by the first formal appropriation recognizing the general field of forest economics, three new research projects will be launched by the United States Forest Service during the next fiscal year, which begins July 1.

The new undertakings will be: A comprehensive survey of the nation's forest resources and requirements; a study of the financial aspects of private forestry practice; and an investigation of forest insurance.

Although plans are still in the preliminary stages, it is intended to expand the forest economics work under the regional experiment station scheme of organization; and, as far as possible, men at work on economic projects will be assigned to the various forest experiment station staffs.

Lumbermen Give Timber to Reconstruct "Old Ironsides"

A gift of timber for the masts and spars of the frigate *Constitution*, now being restored to her original condition, was formally presented to the United States Navy last month, at Seattle, Washington, by the West Coast Lumbermen's Association. Nearly 75,000 feet of timber, including eight timbers over 100 feet long, are included in the gift, which the railroads transported to Boston, Massachusetts, without charge to the Navy.

Felker Morris, a descendant of one of the officers who served on "Old Ironsides" during the War of 1812, sawed some of the timber and christened the shipment.

National Committee Meets

The annual meeting of the National Committee on Wood Utilization, held in Washington, D. C., late in April, was featured by an address by R. Y. Stuart, Chief of the United States Forest Service, on "Wood Utilization in Relation to the National Forestry Program." Dudley F. Holtman, construction engineer with the National Committee, told of the completion of a manual on wood construction, which has been prepared for the consumer. Addresses and reports were presented by Assistant Secretary of Commerce MacCracken, Director Axel Oxholm and Dr. Julius Klein.

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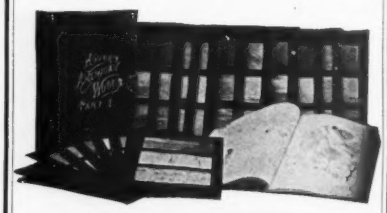

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Land Acquisition Division Formed in Biological Survey

Secretary of Agriculture Hyde has authorized the creation in the Bureau of Biological Survey of a new unit, effective July 1, to be known as the division of land acquisition. This new activity is authorized by an act of Congress, approved February 18, 1929, known as the Migratory-Bird Conservation Act. Its purpose is to meet more effectively the obligations of the United States under the Migratory-Bird Treaty with Great Britain by lessening the dangers threatening wild fowl from drainage and other causes, through the provision of areas of land and of water to furnish in perpetuity reservations for their adequate protection through acquisition by purchase, gift, or lease. The field of work will extend throughout the United States, including Alaska.

The new division will be directed by Rudolph Dieffenbach, senior land valuation engineer, who has been conducting work incident to the acquisition of lands on the Upper Mississippi River Wild Life and Fish Refuge and elsewhere for the Survey since 1925. Mr. Dieffenbach's experience on various phases of land work has extended over a period of more than twenty years.

Los Angeles to Have Forestry Department

Ordinances providing for the creation of a city forestry department for Los Angeles, California, and outlining a method of procedure under which a comprehensive and city-wide tree planting program is to be undertaken, has been unanimously adopted by the city council. The ordinances were recommended by the city committee of parks and playgrounds.

Soil-Erosion Program Outlined

Definite plans for attacking the national soil-erosion problem, which call for the establishment of seven regional erosion stations in widely separated areas and the cooperation of three bureaus of the United States Department of Agriculture and the State experiment stations, have been announced by Dr. A. G. McCall, chairman of the special committee recently appointed by Dr. A. F. Woods, Director of Scientific Work for the Department of Agriculture, to deal with the erosion problem.

Congress recently appropriated $160,000 for use by the Bureau of Chemistry and Soils in experiments looking to the prevention of the enormous annual loss of soil and soil fertility from rainwash and gullying which is now estimated at $200,000,000 annually. Experimental work on the susceptibility of various types of soil to erosion carried on by the Bureau of Chemistry and Soils in connection with its nation-wide soil survey has resulted in a preliminary reconnaissance which indicates there are eighteen regional areas where the problem of erosion is sufficiently acute to require the establishment of erosion stations as centers from which to combat this rapidly increasing menace. The Forest Service and the Bureau of Public Roads have also contributed valuable work in this study.

Park Conference Opposes Power Development at Cumberland Falls

Vigorous reiteration of its stand opposing power development at Cumberland Falls was the outstanding action taken at the Ninth Annual Meeting of the National Conference on State Parks held at Clifty Falls, Indiana, May 7, 8 and 9. The meeting was attended by over one hundred and thirty men and women interested in the development of state parks and forests. Practically every state of the Union was represented. The first two days of the meeting were devoted to papers and talks dealing with state park programs and methods of state park development. The third day was given over to a trip to Indiana's State Forest in Clarke County.

Stephen T. Mather, formerly Director of the National Park Service, was reelected Chairman of the Board of Directors of the Conference and William A. Welsh was elected Vice Chairman. Harry C. Trexler of Allentown, Pennsylvania, was elected a new member of the Board of Directors to succeed J. O. LaGorce of Washington, resigned. The Conference voted to hold its next annual meeting at Lynnville Gorge, North Carolina.

Oil Conservation On Indian Lands

The Secretary of the Interior, Ray Lyman Wilbur, has issued an order forbidding the leasing of oil lands on all territory owned by Indians except the Osage Reservation in Oklahoma. His mandate is in line with the oil conservation policy laid down by President Hoover.

On the Osage Reservation only 25,000 acres will be offered for lease, in accordance with the Act of March 2, 1929. Previously Congress required the Secretary of the Interior to lease 100,000 acres.

Originally there were 1,500,000 acres of oil lands in the Osage reserve, of which about 1,000,000 acres remain. Oil production on the land, recent figures compiled by the Department of the Interior show, aggregates about 60,000 barrels of crude oil a day, on which the Indians receive a royalty of one-sixth or one-fifth the profits.

International Paper and Power Company Acquires $10,000,000 Interests in Newspapers

Interests amounting to more than $10,000,000 in thirteen of the country's daily newspapers has been acquired by the International Paper and Power Company, it was revealed recently by the Federal Trade Commission. A. R. Graustein, president of the company, appearing before the Commission, stated that the investments were made with the object of obtaining outlets for International news print. He denied that the company sought to influence news or editorial policies of the newspapers with which they had established financial connections.

"In 1928 the International Company suffered a heavy deficit," Mr. Graustein declared, "due to the fact that it had to curtail its newsprint output very substantially. It was to remedy this situation that interests were purchased in a number of newspapers.

"The International has no right, ability, or desire in any way to influence the news or editorial policy in any newspaper in the whole country. The International feels that it would be unwise policy from the point of view of its power properties to adopt any other policy."

The newspapers in which the International Company purchased an interest were listed as follows: *Brooklyn Daily Eagle, Chicago Daily Journal, Spartanburg* (South Carolina) *Herald-Journal, Chicago Daily News, Ithaca* (New York) *Journal-News, Albany* (New York) *Knickerbocker Press, Albany Evening News, Tampa* (Florida) *Tribune, Greensboro* (North Carolina) *Record, Boston Herald, Boston Traveler, Augusta* (Georgia) *Chronicle,* and the *Columbus* (South Carolina) *Record.*

4-H Club Tree Planting Increases in New York

Nearly 900 members of the 4-H Clubs from thirty-two counties in New York, made their first forest plantations this spring. Each member received 1,000 young trees from the State Conservation Department and signed a pledge to plant the trees properly and to see that the plantation was protected from grazing and fire.

In 1927, when the first 4-H plantations were made, fifty members representing fifteen counties planted 500,000 trees. Last year there was an increase of fifty per cent in the number of members participating, and this year nearly 900,000 trees were planted.

Mexican Quail Sent to Italy

The recent shipment of 2,928 Mexican quail to the University of Bologna, Bologna, Italy, for restocking purposes, was the first large consignment of such birds made to a European country. The quail were brought in from Mexico at Brownsville, Texas, and were shipped through an American importer on February 28.

Coordination Sought for Forest Protection Agencies

The Forest Protection Board, appointed in 1927 by Rear Admiral H. H. Rousseau, Chief Coordinator, recently filed a report of its findings and recommendations. The board comprises heads of the various agencies of the Federal Government associated with forests, with R. Y. Stuart, Chief of the Forest Service, as chairman.

Two methods of coordination in forest protection were recommended. The first is to secure consistency of policies laid down by Federal, State and private agencies, and the second to promote efficiency through cooperation, the adoption of best methods and avoidance of duplicating and overlapping efforts. What can be accomplished through such coordination is indicated in the board's statement that cooperation in the purchase and handling of commodities used in forest protection saves approximately twenty per cent.

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"Exploded Wood" to Russia

The Masonite Corporation, of Laurel, Mississippi, creators of the "exploded wood" process of making insulation board and other material from wood waste, has announced that a plant will be erected in Russia in the near future in cooperation with the Amtorg Trading Corporation.

SILVER BIRCHES

Like graceful ghosts
And yet far too alive for
Association with things
Dead and gone.
Seeing them limned against
The rosy clouds at sunset,
They are tall, straight,
And slim; silver wands
Woven about with a mesh
Of delicate twigs
And leaves, all lined with
Frosty green-gray,
Tracing a lacy pattern
Upon the distant sky.

—VIOLET M. LEES

Milwaukee Sports Show Draws Record Crowd

Milwaukee, called the gateway to the Land of Lakes, was the setting for an elaborately staged boating, outdoor and sports exhibition early in May. The exposition, said to be the most pretentious event of its kind ever held in the Northwest, was sponsored by the *Milwaukee Sentinel*. Local and national organizations, including the Isaak Walton League and the Milwaukee Yacht Club, cooperated in planning the event.

Minnesota's Forest Program Fails

Three of the four most important bills in the forestry program recommended to the Minnesota Legislature by an interim legislative committee on reforestation failed of passage in the Senate after overwhelming victories in the House. The fourth bill was vetoed by Governor Christianson.

The House adopted bills providing for a new Department of Conservation having charge of related bureaus of conservation for forestry, game and fish, drainage and waters, lands and timber; for forestry control of 300,000 acres of state land now outside the reserves, and for establishment of a state nursery. All these lost after a hard battle in the Senate. A fourth bill providing that the state should pay 5 cents an acre annual tax on State Forest land to counties was passed by both houses but was vetoed.

The following bills were passed by both houses and signed by the governor: appropriating $40,000 for a land economic survey of the timber region; providing for interchange of state and federal forest lands to allow consolidation for forest management; reducing tax on private lands designated for permanent forestry from 8 cents to 5 cents an acre, plus 3-cent fire tax and 10 per cent yield tax; strengthening fire laws and holding persons responsible for starting fires in the woods; authorizing the state forester to accept gifts of land of 40 acres or less as sites for fire towers or headquarters, and empowering him to condemn lands for that purpose; and providing means to combat white pine blister rust.

Whitney Leaves Michigan

Alvin G. Whitney, assistant professor of forest zoology, School of Forestry and Conservation, University of Michigan, has resigned to become assistant director and secretary of the New York State Museum, at Albany. Before going to Michigan, Professor Whitney was connected with the New York State College of Forestry and was assistant director of the Roosevelt Wild-Life Forest Experiment Station.

Decline In Canadian Loss From Forest Fires

Forest fire losses in Canada were lower in 1928 than in 1927, although the area burned over was much greater, says a report from the Assistant Trade Commissioner at Ottowa, A. H. Thiemann, to the Department of Commerce. A total gross damage of $1,328,950 was caused by 4,259 fires, burning over an area of 1,347,170 acres during the past year, according to the Forest Service of the Department of the Interior, Mr. Thiemann stated.

Minnesota Memorializes Congress

The Minnesota Legislature at its recent session passed by an overwhelming vote a resolution memorializing Congress to pass the Shipstead-Newton bill, designed to protect the levels of international waters in lakes and streams of northern Minnesota. The bill further seeks to preserve and develop the lake region, including a large portion of the Superior National Forest as a wilderness area. The ultimate plan of those supporting the legislation is to create an international park and forest which will embrace the Superior National Forest, in northern Minnesota, and the Quetico Provincial Park across the international line in Canada.

The action of the Legislature in memorializing Congress, it is said, well expresses the sentiment of a majority of the people of the State in respect to the legislation proposed. Individuals and organizations of the State are also expressing keen interest in the selection of a successor to former Senator Clarence D. Clark of Wyoming, who has just resigned as chairman of the International Joint Commission.

"The announcement of Mr. Clark's resignation" declares the Quetico-Superior Council, composing many organizations sponsoring the Shipstead-Newton bill, "is of keen interest in Minnesota, adjoining states and Canadian provinces, since the Commission has pending an investigation referred to it by the State Department concerning the alteration of the levels of the Minnesota-Ontario border lakes.

"Few propositions in the history of the state have aroused such public interest. The 1925 hearing on this reference disclosed a proposal to convert to private uses a unique region of vast size already largely dedicated to public purposes. The public sees in the Commission a piece of international machinery of the highest promise. In 1909 by treaty the two countries agreed to establish a commission, made up of three Canadians and three Americans, without whose approval there could be no change in water levels along the Canadian-American border and to whom could be referred for report any questions vexing peaceful relations. Provision was even made whereby upon request of both governments in special cases the Commission could act as a board of arbitration. Thus the Commission marked an early and notable advance in international affairs.

"Here is a permanent advisory board of international character, which if need be can be called upon as a North American Hague tribunal. Its potentialities, especially in these days of rapidly growing uses for the boundary areas, are enormous. Obviously, much will depend as to the usefulness of the Commission upon the questions referred to it, whether they be of a large public nature or merely for the gratification of private ambition.

"Minnesota has much at stake. Sooner or later the Great Lakes waterway project will probably come before this body. Meantime, the fate of the border lakes, Minnesota's richest asset is health and beauty, is hanging in the balance. The Izaak Walton League, the American Legion, the Federated Women's Clubs, the Federated Farm Bureaus, the Arrowhead Association, all the countless individuals and societies in Minnesota that have striven to perpetuate our border lakeland will await with intense interest the announcement of the President's new appointment. Nor is the stake less high or the interest less keen in the nation as a whole. It is realized that a heavy responsibility and a real opportunity lie before the International Joint Commission."

Hardwood Extension Manager

The Appalachian Hardwood Club appointed David G. White, of the National Lumber Manufacturers Association, Trade Extension Manager, effective May 1. The appointment is a conservation measure intended to discourage waste through improper use of such woods as the soft-textured oak, yellow poplar and chestnut, produced in the Southern Appalachian Mountains.

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Hot Springs National Park to Be Developed and Improved

Hamp Williams, of Hot Springs, Arkansas, has been named chairman of a special committee appointed by Secretary of the Interior Wilbur to make a study of Hot Springs National Park, looking toward recommendations for its further development and improvement. Other members of the group will be the park Superintendent and the medical officer in charge of the Army hospital in the park.

The problems to be considered are the further beautification of the tract, conservation of the water from the springs, and new roads. Hot Springs National Park was the first area set aside as a reservation to be used in the public interest and marked the first step toward the development of the National Park Service. The centennial of its founding will be celebrated in 1932 and it is hoped that the improvements will have been made by that time.

Machine Constructs Safety Strips

A new device for the construction of back strips by railroads has been designed and successfully manipulated by Forest Inspector J. D. Derr, of the Weiser Forest District, Pennsylvania. It is said to facilitate work to such an extent that three men and a team can construct as much back strip in an hour as can be made by a crew of six men working with ordinary tools in half a day.

The device is a combination scraper and shallow plow, drawn by horses. It clears a strip about three feet wide and at the same time gouges out the mineral soil to a depth of from one to three inches. The whole implement weighs about 300 pounds and an additional 100 pounds can be placed upon it to get the necessary depth. It is pulled over the back strip four times and can negotiate stones a foot or less in diameter if they are not scattered too thickly.

WHO'S WHO
Among the Authors in This Issue

George D. Pratt

George D. Pratt, of New York, is President of The American Forestry Association and one of the nation's outstanding leaders in forest and wild life conservation. He was formerly Conservation Commissioner of New York State.

Howard R. Krinbill is a Forest Valuation Engineer, in charge in the Southern States, of the Timber Section of the United States Bureau of Internal Revenue. He is a graduate of the Biltmore Forest School and was engaged in private forestry work before becoming associated with the Bureau of Internal Revenue.

A. T. Jackson

A. T. Jackson has written much concerning trees—and human nature. He is a native of Texas, where he now resides. He has been a newspaper reporter, and advertising man and statistician. His ambition is to find and photograph the most unusual trees in the country.

Marie Pake is a writer of articles and short stories and makes her home in San Francisco, California. The outdoors and outdoor people have always intrigued her.

Frank A. Waugh

Frank A. Waugh is head of the Division of Horticulture and professor of Landscape Gardening at the Massachusetts Agricultural College, at Amherst. He was born in Wisconsin, became a newspaper man, and then a professor. His chief diversions from the routine of an educator are photography, writing, forestry and practical landscape architecture.

G. H. Collingwood is Forester for The American Forestry Association; Lilian M. Cromelin and Erle Kauffman are Assistant Editors of *American Forests and Forest Life;* Lynn F. Cronemiller is Deputy State Forester for Oregon; Jack A. Bristol writes from Omaha, Nebraska; and Robert S. Woods makes his home at Azusa, California.

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